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Food systems transformation requires science–policy–society interfaces that integrate existing global networks and new knowledge hubs

Sustainable food systems are key to achieving Sustainable Development Goals (SDGs), but food systems fall short on multiple fronts as they place pressure on natural capital and ecosystem services while generating significant greenhouse gas emissions. To future-proof food systems, the United Nations Food Systems Summit (UNFSS) called for a transformation of food systems that guarantees equitable access to affordable, healthy, and safe food, produced in fair and environment-friendly ways. Such a transformation will be challenging[1,2].

Efficient science–policy interfaces (SPIs) that effectively bridge the local to global span of food systems in a coordinated way will be key to transformation. Effective SPIs need to support six key functions: forecasting and monitoring, capacity building, data collection, independent assessment, engagement and diplomacy[3,4]. We, the members of a European Commission high-level expert group (HLEG), have suggested three pathways to achieve effective SPIs: (a) strengthening and adapting existing SPIs with additional resources and a broader mandate to engage across the food sector and across scales and engage with society, (b) enhancing the multilateral institutions' capacity to cooperate with member states and fund a series of task forces to fill priority knowledge and data gaps, and (c) creating a global coordination hub comprising multilateral institutions through collective investment in a 'network of networks'[3,4].

But we must go further; achieving a sustainable food system transformation requires an inter-linked ecosystem of 'science–policy–society' interfaces (SPSIs) that embody participation, legitimacy, accountability, transparency, rigour, capacity and empowerment. This approach moves beyond traditional unidirectional SPIs to novel SPSIs that can catalyse dynamic flows of information, evidence and insights to support policy actions. SPSIs will ensure ground-truthing of scientific evidence in multiple local contexts to engage with food traditions and holders of traditional knowledge, industry and commercial food players. A future SPSI landscape must place key principles at the heart of any undertaking.

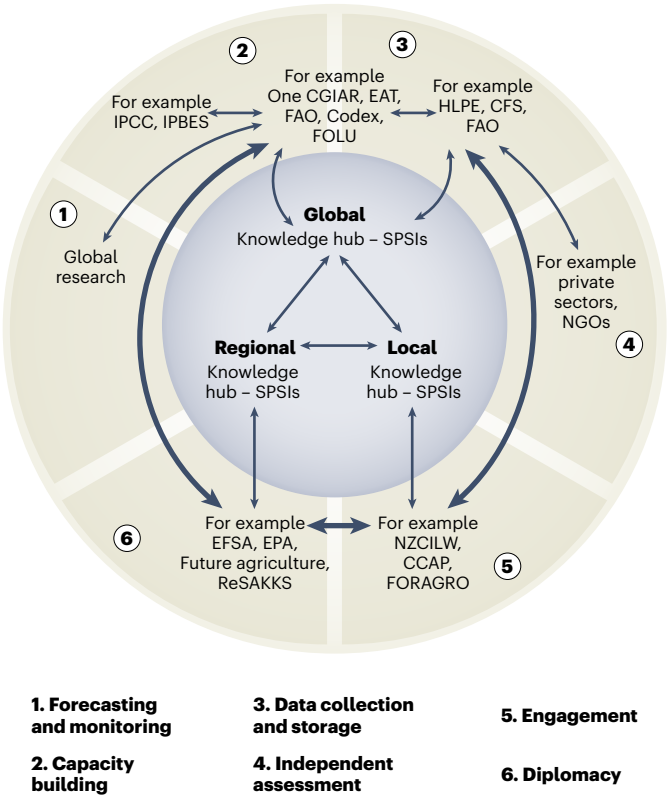

Fig. 1 | A potential food systems SPSI from a network of existing knowledge hubs and SPIs. Local, regional and global scale organizations (inner ring) can collaborate to provide six key functions identified (outer ring) for food systems transformation. This network could coordinate activities to promote sustainable production, trade, healthy diets and waste management while explicitly considering the needs of local culture and communities. For example, at the global scale One CGIAR and FAO among others could host a data repository for assessment and forecasting in coordination with IPCC, IPBES and others. Similarly, the HLPE (with support from FAO and other United Nations agencies) with an expanded mandate and additional resources can coordinate periodic assessment, forecasting, foresight and recommendations for policy actions in partnership with other SPSIs and the global research community (middle ring). The global-scale information can be fed by similar approaches at local and regional levels that will promote collaboration across all stakeholders to deliver functions for food transformation across all scales. FOLU, Food and Land Use Coalition; NGOs, non-governmental organizations; EFSA, European Food Safety Authority; EPA, United States Environmental Protection Agency; ReSAKKS, Regional Strategic Analysis and Knowledge Support System (for Africa); NZCILW, New Zealand Challenge Initiative on Land and Water; CCAP, China Centre for Agricultural Policy; FORAGRO, Forum for the Americas on Agricultural Research and Technology Development.

These are: (a) political legitimacy; (b) participation of traditionally excluded and equity deserving groups; (c) transparency and democratic decision making; (d) integration of a variety of concerns emerging at different scales and across different sectors of the food system; (e) independence and rigour; (f) permanent attention to clearly defined and measurable impacts.

Much of the literature agrees with these principles and functions of SPSIs[2,3,5]. Yet, concrete pathways forward remain debated in the wake of the UNFSS. Given the time and resource constraints as well as the existence of relevant panels (for example, the High-Level Panel of Experts of the Committee on World Food Security (HLPE); Committee on World Food Security (CFS)), establishing a new institution as an SPSI for food systems would encounter a range of political and practical challenges[4,6,7]. The urgency for food systems transformation to meet the deadlines set by the 2030 agenda of the SDGs, means that this option – establishment of a new institution – is unlikely to have an impact soon enough.

One of the best ways forward is to strengthen existing institutional and human capacities such that the current landscape of SPSIs is empowered to work more collaboratively. Enhancing the current SPSIs landscape now does not exclude the ambition to transform the intergovernmental food systems SPSI landscape beyond 2030. Indeed, the next eight years could provide evidence as to whether the modified SPSI landscape proposed below (Fig. 1) could deliver transformation and whether a new specific SPSI is, in fact, needed.

Numerous research institutions, development agencies and time-bound projects have made (or are making) significant contributions that could be harnessed to create a more sustainable, equitable and nutritious food system. Harnessing existing resources can address some of the gaps in understanding constraints to action, for example, local variability in food system drivers and outcomes and social justice dimensions, such as fair wages and work safety conditions. Similarly, the effectiveness of SPSIs can be improved by addressing the challenge of linking multiple food system concerns and topics. These include a better understanding of time constraints and convenience as drivers of household food choices, and finding gaps in how science-based policy dialogue processes engage with relevant stakeholders. Overall, a multi-sectorial interdisciplinary approach is needed to connect different actors, drivers, stakeholders and dimensions of food systems. Reformed SPIs can deliver the remit of assessing, forecasting, exploring futures and recommending options – but enhanced infrastructure and resources are needed to invite, assemble, assess and produce reports and recommendations.

We believe it would be wise to establish a network of food systems SPSIs and integrate some of their activities with SPIs from other sectors. For example, the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) periodically assess food and agriculture impacts of climate change and biodiversity. Collaboration with these institutions and larger societal stakeholders will leverage their resources, data, models and societal engagement platforms. Food SPSIs can also benefit from their expertise and tools in developing scenarios of unexpected events (for example, pandemics, climate extreme events, wars and social conflicts). For example, One CGIAR (in partnership with the Food and Agriculture Organization of the United Nations (FAO) and others) could host a data repository for assessment and forecasting, in coordination with IPCC and IPBES. Similarly, expanded resources, mandates, and accountability will allow the HLPE/CFS (with support from FAO and other United Nations agencies) to coordinate periodic assessment, forecasting, foresight, and recommendations for policy actions in partnership with other SPSIs and the global research community. But structural issues within the current system demand that SPSIs for food systems must integrate knowledge and policy advice from local, regional, and global scales (Fig. 1) to promote sustainable production, trade, healthy diets, and waste management while explicitly considering the complexity and diversity of sociocultural norms. In developing actionable advice, food system SPSIs must also consider planetary boundaries, societal feedback, and political buy-in for effective policy development and implementation[2,4]. This is not a trivial task. It will require prioritization of actions (for example, no hunger, nutritions) and legislative actions (to increase mandates, accountability, resources) and hence international political negotiations. The COVID pandemic and war-linked fragility in the global economy raise challenges in terms of securing additional funds, and it is likely that developed economies will need to bear the initial cost until circumstances improve globally. However, a concerted effort now at United Nations organization level can set the ball rolling towards meeting some key food-related SDGs, and when geopolitical situations stabilize, this can be further built on for ambitious changes needed to deliver food systems transformation.

Effecting a transformation of global food systems is one of humanity's highest priorities and will drive food security and nutrition outcomes while at the same time contributing to multiple SDGs. With only eight years remaining, the challenges of reaching the SDGs demand the best possible knowledge to support decision makers at all scales. This means policymakers around the world must commit to the creation of a better-resourced landscape of food system SPSIs as a vital means to support the urgently needed transformation of the world's food systems.

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Competing interests

The authors are members of the European Commission HLEG, on International Platform for Food Systems Science. The HLEG acts independently and in the public interest.