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Ensuring societal considerations are met when translating science into policy for sustainable food system transformation

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ABSTRACT

Background: A food system transformation is needed to address food and nutrition security, minimise impacts on planetary health, reduce climate change emissions, and contribute to equity, diversity, and the Sustainable Development Goals.

Scope and approach: This paper summarizes findings of the European Commission's High Level Expert Group on Food Systems Science, which reviewed obstacles that prevent food systems policy from achieving society-wide impacts. These barriers include knowledge and translation gaps in food-related science-policy-interfaces (SPIs), insufficient attention to the priorities of diverse stakeholders, and a failure to adequately consider equity, diversity, political economy, and societal engagements.

Key findings & conclusions: Three potential pathways can ensure science and policy support food systems transformation: (1) *Adapt* the current SPI landscape with extra resources and a wider mandate to ensure coordinated action across the full food system, (2) *Enhance* the current policy landscape with a range of multisectoral taskforces designed to fulfill specific functions such as creating an enhanced food systems data portal, and (3)

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Establish a "network of networks" to provide both global coordination as well as organize defined agendas at global through to regional scales.
In embarking on these pathways, a revised science-policy-*society* landscape (SPSIs) should deliver the following core functions: (1) Engage and empower multi-stakeholder dialogue; (2) Build capacity at multiple scales to translate evidence into tangible real-world outcomes; (3) Ensure access to openly accessible data for the entire food system; (4) Use models, forecasts, and scenario building exercises to explore the potential future of food systems; (5) Produce assessment reports and policy publications; and (6) Establish fora for diplomacy that will be empowered to create standards set targets and establish policy.

1. Introduction

To achieve both the Sustainable Development Goals (SDGs) as well as the Paris Agreement's climate change targets, food systems must support healthy diets for all and sustainable production practices. But everywhere food systems are falling short. Existing food systems place undue pressure on natural capital and ecosystem services while contributing significant greenhouse gas emissions. At the same time, many of the world's food systems do not result in optimal dietary patterns, leading to the growing epidemic of diet-related preventable diseases and undernutrition (Willett et al., 2019). Recent pandemics and armed conflicts highlight the fragility of today's food systems. To future-proof food systems while making them more sustainable, the UN Food Systems Summit called for a food systems transformation that leads to equitable access to affordable, healthy, and safe diets, produced in ways that are environmentally-friendly and just. Such a transformation will be extremely challenging. At a minimum, it will require strategies for knowledge management to inform actions, integrated and coherent policy, and effective public and private sector investments (Guterres, 2021).

While there is a consensus that policies to support food systems transformations must be based on the 'best science',[1] disagreements exist on how best to link science and action (e.g., see Clapp et al., 2021). Such criticisms are especially relevant given that using evidence effectively often fails to deliver meaningful change. The reasons for this disconnect include insufficient policy-relevant research to support consideration of alternatives, time-lags between the development of policy questions and research by the scientific community, a lack of evidence on 'how' to implement recommendations, inadequate resource allocations, and a lack of capacity to interpret and deploy evidence. Obstacles also arise through decision-making systems, including: i) a lack of attention to the priorities of diverse stakeholders, and especially marginalized actors including small-scale farmers, women, Indigenous people and migrant workers, ii) the disproportionate power exerted by large-scale producers and large food processing companies and retailers, and iii) an unwillingness of policymakers to deal with trade-offs, resulting in inertia as the least-difficult position to take (De Schutter, 2017; Singh et al., 2021).

Although many strong science-policy interfaces (SPIs) exist today, in general existing systems that try to bridge science and policy are insufficient (von Braun et al., 2021) and better integrated systems are needed to bring together fragmented advice and disparate actions across current food systems (Hainzelin et al., 2021). Better policy making requires systems that foster greater coherence among subject matter experts and people with lived experience on topics as diverse as health, climate change, trade, social and gender equity, and biodiversity conservation. There is, therefore, an urgent need for novel and more effective forms of "science-policy interfaces" that extend their influence by directly including "society" to become Science-Policy-*Society* Interfaces (SPSIs) (Webb et al., 2022). Recently, the European Commission established a High-Level Expert Group to study this issue and make recommendations. This article provides a precis of the finding of this process and discusses the implications (Webb et al., 2022 is the reference to the full 70-page report that this summary draws on).[2]

2. Current obstacles and challenges

Several SPI platforms already provide both formal mechanisms and informal ways to influence food systems policy processes and functions, but each has limitations. For example, the UN's High-Level Panel of Experts on Food Security and Nutrition (HLPE) reports to the Committee on World Food Security (CFS) and offers to address policy gaps. However, the HLPE does not currently have a strong enough mandate or adequate resources to lead the global charge on food systems transformation; nor does is have sufficient connections to local actors and networks to drive change at a regional or sub-national scale (see Supplementary Table 1). Separately, the Intergovernmental Panel of Experts on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) focus on food systems' impacts on climate change and on biodiversity loss respectively. Nevertheless, where IPCC and IPBES address food systems concerns, they mostly focus on agricultural issues and deal less (or not at all), with healthy diets and the sustainability of entire food systems. There is wide consensus, therefore, that the current SPI landscape does not sufficiently address the requirements of food systems transformation (e.g., see Fears et al., 2019).

The European Commission's High Level Expert Group's report on science policy interfaces reveals several key constraints that hinder the ways in which evidence translates into food systems policy. These constraints include a lack of: (1) systematic and regular forecasting, modelling, and scenario building at both global and regional levels, (2) rigorous, independent, and future-oriented assessment reports that provide indicators of the current situation along with an assessment of progress and trends, (3) input by marginalized groups (e.g. Indigenous people small-holder producers, women, and migrant labourers); and (4) a comprehensive and publicly available data portal designed to collect, store, integrate, and disaggregate data from across the food system, including data from the private sector as well as information on environmental, social and health factors (Webb et al., 2022).[3]

Of course, improved science policy interfaces are insufficient to enact food systems transformations. Indeed, a considerable body of food-related knowledge is currently available but has not been fully harnessed (e.g., see: Turnhout et al., 2021). Furthermore, there is a robust

[1] We define 'best science' as science that encompasses not only natural, technological and social and economic science, but also includes recognition and evidence of knowledge systems from non-traditional sources such as Indigenous cultures, citizens and private sectors.

[2] The full 70-page report is entitled Everyone at the Table: Transforming Food Systems by Connecting Science, Policy and Society. It is the official final report of the European Commission's High Level Expert Group that was established to assess the needs and options for strengthening science–policy interfaces for improved food systems governance. Briefly, this report explores the urgency of food systems transformations, the principles and functions needed for effective science-policy-society interfaces, reviews the landscape of current science policy interfaces for food systems, and explores pathways of transformation.

[3] Some dashboards do exist, such as the Food Systems Dashboard and FAOSTAT, and these represent complementary assets around which to grow a more comprehensive system.

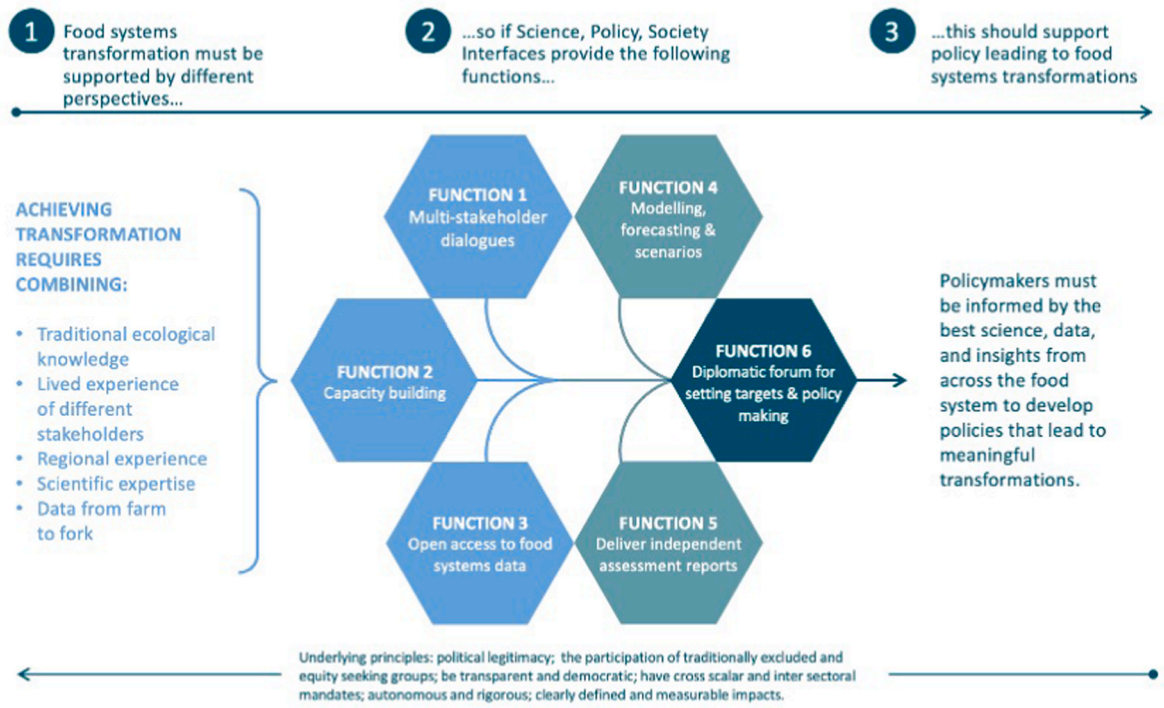

Fig. 1. Theory of change that underpins the recommendations made by the EC's high level expert group (adapted from Webb et al., 2022).
Explanation:to drive food systems transformations, the food system must be understood from multiple perspectives (step 1). Next, the proposed functions of SPSIs (step 2) must be used to inform policy development (step 3). The light blue functions (F1-3) focus on engagement and capacity building; the light grey functions (F4&5) involve analysis and assessment; the dark grey function (F6) focuses on delivering policy insights. Together, these elements comprise the theory of change developed by the EC's High Level Expert Group. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

literature on how food systems evidence may be distorted by vested interests, and such observations highlight discourses around government intervention, legitimacy, and impacts (e.g. see Clapp, 2022). Such political concerns are also exacerbated by the fragmentation of the current landscape of SPIs that undermines our ability to systematically explore plausible futures and consider the complexity of cross-sectoral and cross-scalar processes. A more holistic approach is needed, therefore, to integrate different types of knowledge and more diverse groups of actors. Concerns are also raised that the fragmentation of the current systems leads to polarization across diverging views of how food systems should operate and be governed and that this polarization exacerbates asymmetries of power (e.g. Rotz et al., 2019). Such disagreements are exacerbated by a failure to incorporate an awareness of political economy issues to address trade-offs between economic and environmental benefits, conflicts of interest, path dependencies, and conflict over whether access to adequate food is a basic human right (De Schutter, 2009).

3. Proposed paths forward

In summary, the European Commission's High Level Expert Group on Food Systems concluded that the acceptance of science and other forms of evidence into policymaking processes by state and non-state stakeholders requires continuous societal engagement (Webb et al., 2022). As such, a key goal of SPSIs should be to convene diverse stakeholders and perspectives across multiple scales (e.g., the global through to the local) and to achieve this, SPSIs must embody core principles that include political legitimacy, the participation of groups traditionally excluded from policy processes, transparency and democracy, and the ability to work across sectors and scales. To maintain these principals, the High Level Expert Group also concluded that SPSIs should aspire to provide the following functions; (1) Engage and empower multi-stakeholder dialogue; (2) Build capacity at multiple scales to translate evidence into real-world outcomes; (3) Ensure access to data for the entire food system; (4) Use models, forecasts, and scenario building exercises to explore the future of food systems; (5) Issue independent assessment reports and policy publications; and (6) Establish fora for diplomacy, standards/target-setting and policy making (Fig. 1).

To manifest the theory of change outlined in Fig. 1, three tangible policy pathways are proposed. The first recommended pathway is for multi-lateral agencies such as the United Nations, the Rome Based Organizations (e.g. FAO) or the European Commission to *adapt* the current SPI landscape by providing extra resources and a mandate to work across the entire food system including input suppliers, producers, processors, retailers and consumers. For example, new resources and expanded mandates could be delegated to organizations such as the UN's CFS and HLPE, the IPCC, and/or the IPBES. One (or more) of these could be tasked with working beyond traditional horizons and stakeholders by convening dialogues or other processes to engage stakeholders to achieve consensus on different topics. Another way that the existing landscape could be adapted is that the UN could work with key players in today's landscape of SPSIs to produce rigorous assessment reports analogous to what the IPCC produces for climate change. Such reports would need to be on cross-cutting and interdisciplinary topics relevant to food systems transformations. Finally, the international community could better support data portals, including FAOSTAT and the EU-FSDN, as a way of increasing the accessibility, interoperability, and harmonization of data. In doing so, better funded data portals would also be able to establish higher standards in terms of data quality and establish global and regional hubs that would complement databases already hosted by United Nations and other organizations such as the

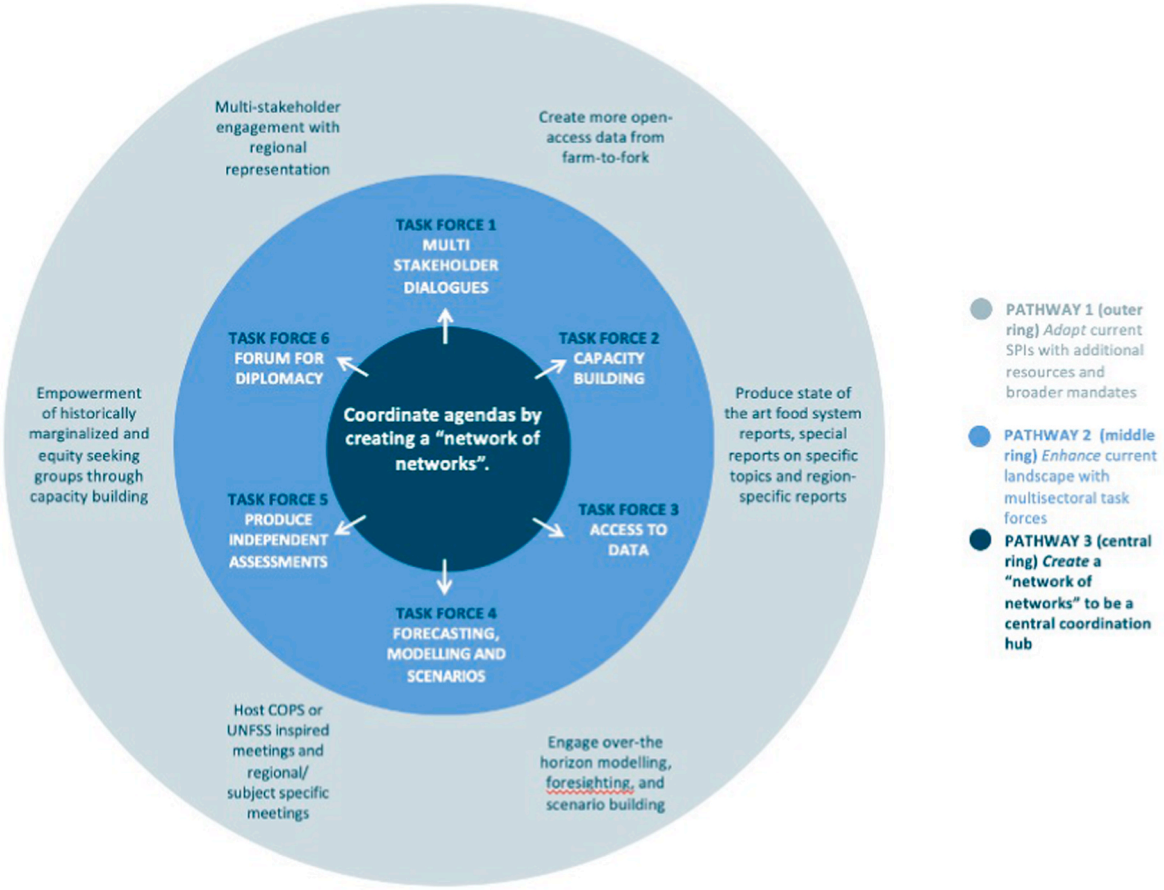

Fig. 2. Heuristic depiction of the three pathways to develop science policy society interfaces for food systems transformations illustrated as a nested series of strategies (adapted from Webb et al., 2022).

World Bank.

A second pathway proposed by the EC's High Level Expert Group is to *enhance* the current landscape with "multisectoral taskforces" (Webb et al., 2022). To accomplish this, multilateral institutions could consider cooperating with member states to fund smaller and agile groups with narrower mandates that would address specific knowledge and data gaps. For example, to engage different stakeholders and ensure that diverse communities, perspectives, and viewpoints are respected, a taskforce could continue facilitating the food systems dialogues that were conducted in the lead up to the UNFSS and continue the process of linking the outputs of these dialogues with regional and national pathways documents. Another task force might receive a mandate to create a blueprint for a longer-term political process that would explore what groups would be best placed to coordinate SPSIs and what kinds of institutional structure could lead to legitimate political SPSIs. A third taskforce could develop regionally relevant (and publicly available) capacity building modules to explore topics such as healthy diets, improved nutrition, etc., and embed these modules within in-country extension services.

A third proposed pathway is to *create* a "network of networks" to promote, coordinate, and drive a food systems transformation agenda. More specifically, this network of networks could ensure on-going support for integrated data portals, a higher degree of capacity building and convene regional assessments that attempt to forecast/model trends in the food system. To achieve such a series of ambitious outcomes, one strategy might be to fund a global coordination hub to identify constraints and needs experienced by local and regional partners and generate multi-directional linkages between science, policy, and community members. Another function would be to administer competitively allocated funding to support tasks related to the functions required by SPSIs. This might include issuing calls for proposals to conduct regional assessments and to convene multi-stakeholder dialogues (globally or in targeted regions or scales) and create future scenarios and policy pathways. Third, this approach could fund national and regional research bodies to conduct quantitative and qualitative modelling- and foresight exercises that consider local concerns, solutions, and innovations. See Fig. 2 for a heuristic depiction of how these three pathways fit together.

4. Perspectives and conclusions

Covid-19 and the global instability caused by Russia's invasion of Ukraine demonstrate weaknesses in today's global food system. These crises highlight the importance of developing more sustainable, equitable, nutritious, and resilient food systems. Hence, it is vital to remember that the food systems we have today are neither eternal nor accidental. Our food production methods, value chains and consumption patterns are all shaped by economic incentives, policy levers, investment decisions, social aspirations and patterns of consumer demand. These factors can be changed, and today we have a chance to make new choices. But each of these choices must be both deliberate and carefully informed by the best available evidence and insights. When appropriate evidence is unavailable, poor decisions become inevitable, and when this happens, the status quo may become even more entrenched.

Given the massive human and planetary health problems linked with today's food systems, policy makers must access and apply not only the best scientific evidence but also other forms of knowledge to support food systems transformations. On its own, however, ensuring

information is available to policy makers through traditional "science policy interfaces" will not be sufficient. In the future, "science-policy-*society* interfaces" must empower civil society, the private sector, academics, and policy makers to work collaboratively to build the collective intelligences global society needs to address real obstacles to transformative change. It is only through such a multi-sectoral engagement strategy that we shall overcome the political and economic barriers that confound reform.

Finally, three key conclusions can act as a foundation on which to build the pathways described above. First, multi-lateral governance organizations, such as the EC and UN, should fully adopt a food systems lens in all their investments and activities. Adopting such a lens will help policy makers better understand and consider the ways in which food producers, processors, and consumers are linked and should empower all relevant stakeholders, diverse voices, and geographic regions to engage in food systems transformation. Second, in adopting a food systems lens, national governments and regional bodies should work collectively to connect stakeholders across all scales, convene regular multi-stakeholder dialogues, anticipate trends, set targets, and articulate policy options. Such collaborations must also be organized to debate progress to fuel action at different levels and openly explore trade-offs. Finally, as a global community, the current landscape of SPSIs must be strengthened to engage a wider range of voices and work to integrate different forms of evidence and data as a way of anticipating trends and setting both targets and standards. If we can accomplish these things, true food systems transformation is possible.

Data availability

No data was used for the research described in the article.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tifs.2023.04.021.

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