

Food Systems and Nutrition Evidence Gap Map

Update #3 (Jan 2022 – April 2022)

Highlights

- We added 47 studies to the EGM, taking the total to 2,219.
 - Most of the new studies focused on the food supply chain (n=21), specifically the production system (n=20). There were 14 new studies related to food environment and 12 new studies on consumer behaviour.
 - The most common outcomes were related to diet quality and adequacy and agriculture (n=18 each). One study related to economic, social, and political stability was added to the map, filling a previously identified gap.
- There continues to be a reduction in the proportion of studies using randomization (now 63 percent of studies). There were large increases in difficult to randomize areas with previously limited evidence bases:
 - A 50 percent increase in the evidence base on market support (four new studies added to the eight existing ones)
 - A 16 percent increase in the evidence base on agricultural savings and credit (three new studies added to the 19 existing ones).
- The shift away from randomization is now being reflected in a reduction in easy to randomize interventions, such as supplementation (n=3) and fortification (n=2). However, there continues to be a focus on the direct provision of food (n=8).
- Six studies evaluated national-level policies, including the first study to evaluate the effects of a sugar-sweetened beverage tax on BMI.
- The map will be updated again in December 2022. It can be accessed [here](#). The original EGM report is available [here](#).

Table 1: Studies added to the EGM

Interventions	Studies and protocols added (studies previously included)
Total studies	47 (2172)
Food supply	21 (945)
Food environment	14 (758)
Consumer behaviour	12 (619)
Common multi-component	4 (101)
Previously identified gaps	
<i>Illustrative list of interventions to priorities for evaluation</i>	
Government manipulations of price	1 (24)
Advertising and labelling regulations	0 (3)

Interventions	Studies and protocols added (studies previously included)
On-farm, post-harvest processing	0 (4)
Interventions to support food packaging	0 (0)
Efforts to support women's empowerment within the food system	0 (12)
Innovative store design	0 (5)
<i>Illustrative list of outcomes to priorities for evaluation</i>	
Women's empowerment	3 (49)
Economic, social, and political stability	1 (3)
Food loss	0 (3)
Environmental impacts of the food system	0 (3)
Measures of diet insufficiency	0 (30)
<i>Illustrative list of evidence synthesis priorities</i>	
Provision of free or reduced-cost farm inputs to crop production	0 (9)
Educational approaches within the food value chain	0 (8)
Agricultural insurance products	0 (1)
Outcome related to other diet quality and adequacy measures	0 (24)

Background

The European Commission's High-Level Expert Group that focuses on strengthening the science-policy interface recently published a [call](#) for member states to fund task forces to fill knowledge gaps related to food systems. This has been a longstanding need and one that 3ie has been working to address. With support from BMZ through GIZ's "Knowledge for Nutrition" programme, 3ie completed an [Evidence Gap Map \(EGM\)](#) on Food Systems and Nutrition in 2021 (1). The EGM presents all impact evaluations and systematic reviews of interventions in low- and middle-income countries (LMIC) that function within food systems and measure outcomes related to food security and nutrition.

The map has the dual purpose of serving as a collection of the available evidence and a presentation of knowledge gaps. The EGM acts as a global public good to inform the efficient allocation of resources. It makes existing evidence more easily available to decision-makers, funders, and researchers.

The EGM uses an adapted version of the framework from the High-Level Panel of Experts on Food Security and Nutrition (HLPE) from 2017 to conceptualise the food system, separating it into the three dimensions: (i) food supply chain, (ii) food environment, and (iii) consumer behaviour (Figure 1) (2). With over 1,800 impact evaluations and 170 systematic reviews included, the original EGM was 3ie's largest to date.

The evidence base is rapidly expanding. To ensure that the EGM remains a useful and current tool, we developed it into a living EGM. What this means in practice is that we continuously monitor newly published studies, adding them to the EGM as they are identified. In doing so it ensures that the most recent research remains available to stakeholders and keeps them up to date on the latest evidence. This report presents our analysis of the studies published from January 2022 to April 2022 and discusses changes in the evidence base over this period.

Figure 1: Conceptual framework and theory of change for the Food Systems and Nutrition Evidence Gap Map



Source: 3ie (2020). Adapted from HLPE (2017).

Methods

Search strategy

To populate this EGM, we drew from three sets of searches. First, we re-ran the searches in the [original EGM](#). The search strings used and the databases searched were identical to those in the original EGM, with the exception of correcting a syntax error in the strings for one database (Scopus). Second, we also re-searched grey literature sources included in the original EGM. Third, we screened items retrieved in the searches for 3ie's [Development Evidence Portal \(DEP\)](#)—a database of impact evaluations and systematic reviews across sectors in international development—for relevance to this EGM. Monthly “evidence surveillance” searches are used to populate the DEP. As there is considerable overlap in the inclusion criteria for the DEP and this EGM, pooling these search strategies reduces overall workload and allows more articles to be screened.

The most recent EGM-specific search was run in April 2022, covering the period since the previous searches. The last search for the DEP was conducted in May 2022. The search for grey literature was last completed in January 2022. Relevant studies from these searches

are included in the present update. For the next update, we will present studies added to academic bibliographic databases starting from April 2022. Further updates will be published every four months through March 2023.

Screening

The same process for screening was employed in this update as in the original EGM. Records retrieved through the searches were uploaded into the EPPI-Reviewer 4 software. An automated process within the software was applied to remove duplicates. We applied a machine learning classifier, developed during the original EGM, to these search results, and screened abstracts with a priority score of 30 percent or above. We also applied a second classifier developed with Development Evidence Portal screening data to the EGM search results and screened those scoring 30 percent or above.

Title and abstracts of all imported, deduplicated, and prioritized studies were screened by a single reviewer against inclusion/exclusion criteria. If screeners were uncertain about inclusion, the study was screened by a senior reviewer.

The full texts of studies that met title and abstract criteria were screened by a single reviewer, with the same option to request a second opinion by a senior reviewer in case of uncertainty. All consultants conducting full text screening had conducted screening for the original EGM.

Data extraction, analysis, and presentation of results

Data extraction and analysis procedures were identical to those of the original EGM. Results are presented graphically on the 3ie interactive [online](#) platform. This report presents updated figures, illustrating the evolution of the evidence base.

Results

Our search retrieved 32,012 records (Figure 2). We removed 18,586 duplicates. We also removed 9,908 which were identified as having low probability based on the classifier in EPPI-Reviewer 4. Therefore, 3,518 abstracts were screened. During title and abstract screening, 2,173 articles were excluded, leaving 1,345 to be screened at full text. Finally, 49 relevant articles were eligible for inclusion, two of which were linked to other articles and did not represent unique studies. Therefore, we added 47 unique studies: 46 impact evaluations and one completed systematic review. Of included studies, 15 reports were published before 2022 but added to the databases searched in a delayed manner. The remainder of the newly included studies were published in 2022.

There continues to be a focus on the food supply chain (Figure 3, n=21), specifically the production system (n=20). Many of the studies within the food supply chain are related to education (n=20). Half of these educational activities fall into our “other” category, three were related to the provision of information or guidance, three were on farmer field schools, and

two were on agricultural extension programs. There seems to be less of a focus on interventions that were previously highly studied. Only three new studies were identified in each of the interventions groups on provision of supplements (381 previously included in the map) and the use of peer support and councillors (144 previously included). However, we do continue to see a focus on the direct provision of food (8 added to 214 previously included). We found relatively large increases in the categories of market support (4 new studies representing a 50 per cent increase) and agricultural credit and savings (3 new studies representing a 16 per cent increase).

Figure 2: PRISMA

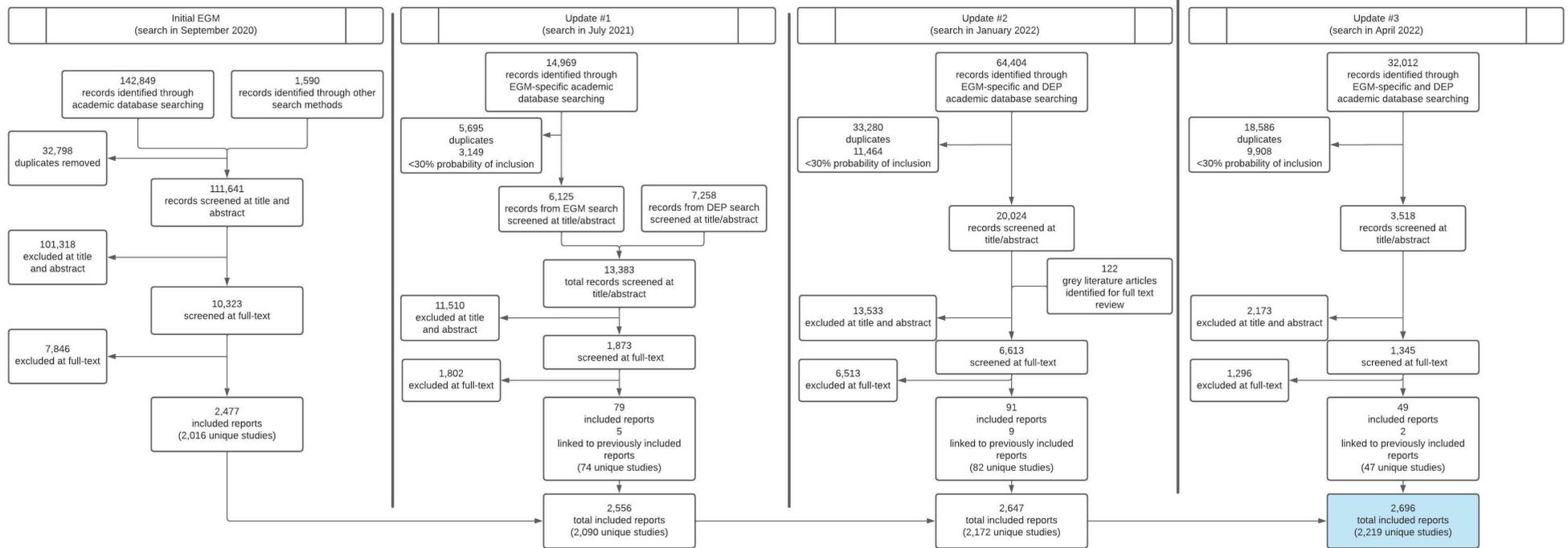
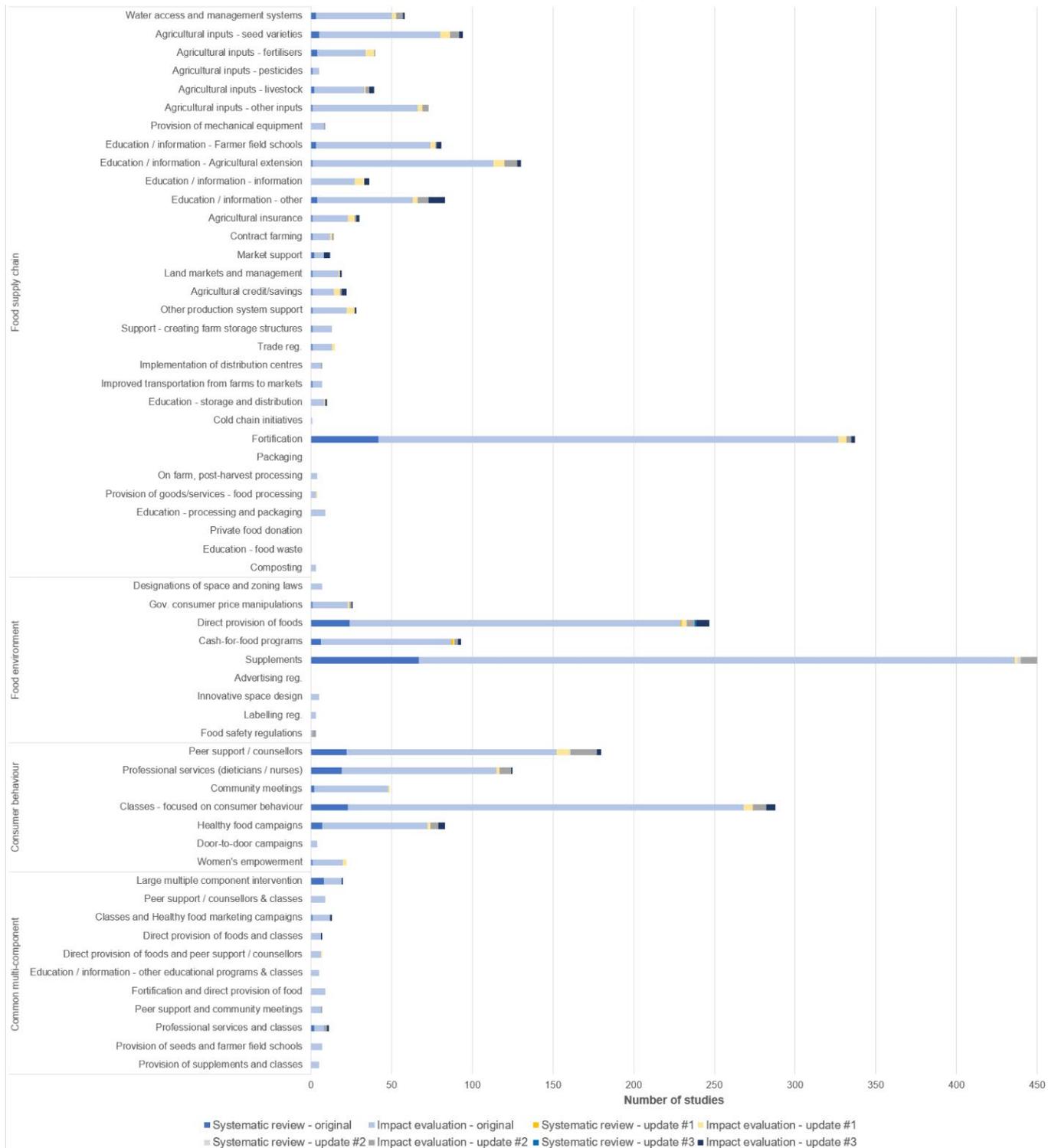
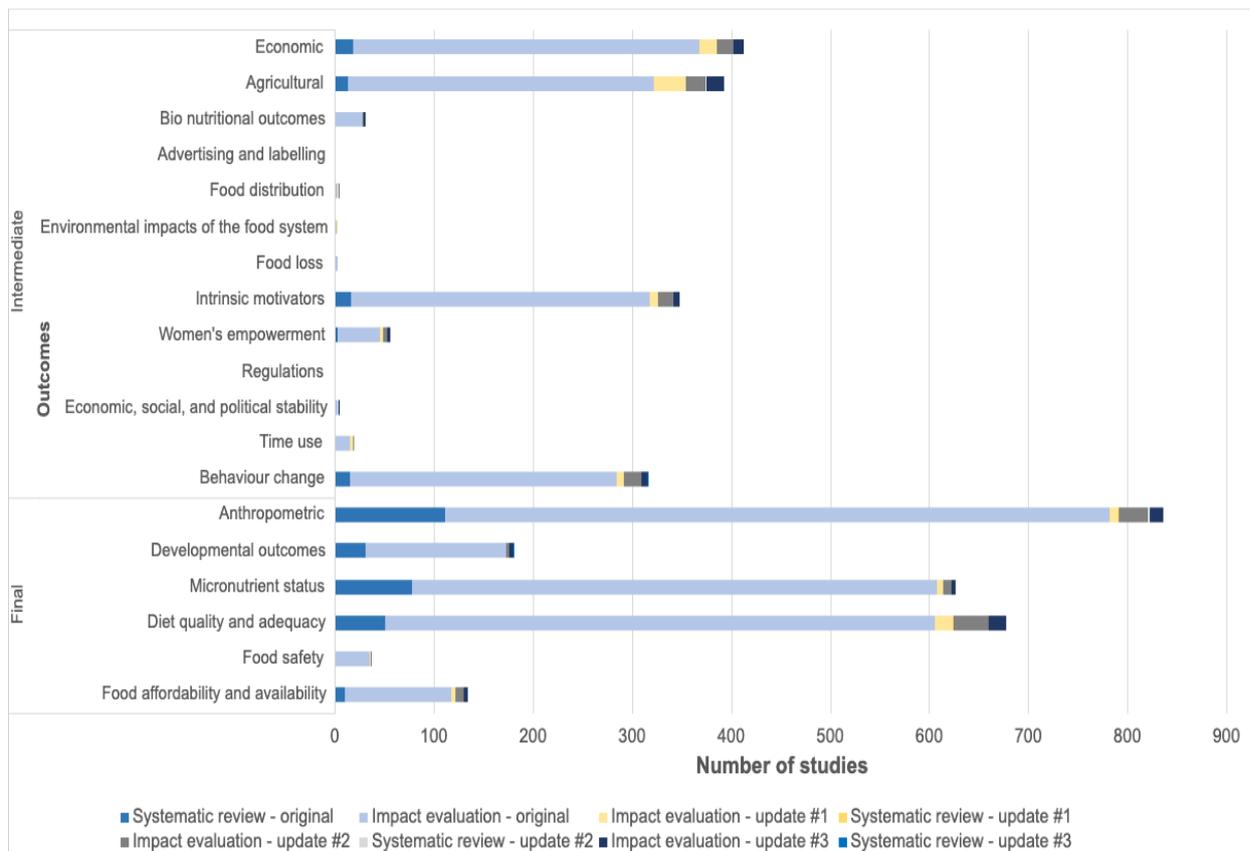


Figure 3: Distribution of included studies by intervention domain and subdomain



Most studies considered diet quality and adequacy outcomes (Figure 4, n=34), particularly measures of dietary diversity (n=16). Anthropometric measures (n=30), largely focused on length (n=23), weight relative to length (n=20), and weight (n=14). Agricultural outcomes (n=27) were generally related to production (n=14) or income (n=10). Three studies considered women’s empowerment outcomes and four considered measures of dietary insufficiency as outcomes, both of which had been previously identified as meaningful evidence gaps.

Figure 4: Distribution of included studies by outcome domain



The proportion of studies adopting experimental designs have decreased since the original EGM: 80 percent in original to 63 percent in update three. Quasi-experimental methods are becoming more common, especially difference-in-difference (n=8), instrumental variable (n=4) and statistical matching (n=4). Indonesia, Ethiopia, and China are the most studied countries, with five evaluations in each. The systematic review focused on direct provision of food and was rated as medium confidence.

communities to receive fortified foods or supplements. Innovative approaches are being used to measure interventions that cannot be randomized, such as national policies (n=6). For example, Cawley and colleagues' (2021) published the first ever study considering the effects of a sugar sweetened beverage tax on BMI (4). Aligning with our findings in our recent systematic review, which found limited effects on purchasing behaviour and inconclusive evidence on diet quality, the tax had no effect on BMI in the Maldives. The study was made possible through the use of standard monitoring data, the World Health Organization's Global School-Based Student Health Survey. This validates a major recommendation from our review: using existing surveillance data is a promising way to evaluate these policies.

We also identified the one of a limited set of studies to consider the effects of interventions within the food system on economic, social, and political stability. A beekeeping and entrepreneurship intervention in Tanzania reduced exposure to community violence and increased financial and social capital among young men (4).

We added three new studies on women's empowerment and one on measures of dietary insufficiency. One of these evaluations considered a gender-blind intervention that offered farmers extension, training both in agricultural technologies and strengthened the farmers access to markets. The intervention actually reduced women's say in production and spending of income, although, they found weak evidence of lower empowerment in social decisions (5).

Studies continue to focus on countries with large populations, such as Indonesia, Ethiopia, and China.

The map will be updated again in December 2022. It can be accessed [here](#). The original EGM report is available [here](#). Notes from the [first](#) update and [second](#) updates are posted online.

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Appendix 1: Studies added to EGM Jan 2022 – April 2022

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About this note

This note presents information and results from the first update to the Food Systems and Nutrition Evidence Gap Map. We discuss the distribution of the evidence base and the current state of the evidence. A new note will be provided in December 2022 with an additional update.

This brief was authored by Charlotte Lane, Veronika Tree, Ingunn Storhaug, and Mark Engelbert. They are solely responsible for all content, errors, and omissions. It was designed and produced by Akarsh Gupta and Tanvi Lal.

The International Initiative for Impact Evaluation (3ie) and Innovative Methods and Metrics for Agriculture and Nutrition Actions research group were funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) through Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) through its “Knowledge for Nutrition” programme in February 2020 to undertake an Evidence Gap Map (EGM) of the effects of food systems interventions on food security and nutrition outcomes. 3ie is solely responsible for the regular updates and maintenance of the map.

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