



# THE EFFECTS OF CAPACITY STRENGTHENING INTERVENTIONS ON FOOD SECURITY AND NUTRITION

*Evidence Synthesis of Development Cooperation  
in Sub-Saharan Africa*

*Executive Summary*

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# IMPRINT

## Authors

Dr Cornelia Römling  
Anna Sting  
Laura Kunert  
Carolin Wicke

## Responsible team lead

Dr Cornelia Römling, Anna Sting

## Responsible head of department

Amélie Gräfin zu Eulenburg

## Design and Layout

Zlatka Dimitrova, DEval

## In cooperation with

Etienne Lwamba, Ingunn Storhaug, Dr Suvarna Pande,  
Pierre Marion, Diana Cordova-Arauz, Dr Shannon Shisler,  
Dr Esteban J. Quinoñes (International Initiative for Impact  
Evaluation [3ie]), Dr Charlotte Coogan

## Editing (original draft in English)

Tate & Clayburn (London, United Kingdom)

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Development Evaluation (DEval)  
Fritz-Schäffer-Straße 26  
53113 Bonn  
Germany

Phone: +49 (0)228 33 69 07-0

E-Mail: [info@DEval.org](mailto:info@DEval.org)

[www.DEval.org](http://www.DEval.org)

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# EXECUTIVE SUMMARY

## Background

Food insecurity and malnutrition remain a global challenge, with poverty being a main cause. Recent events with global repercussions, including the COVID-19 pandemic and Russia's war of aggression in Ukraine, have created shock waves that disrupt global food trade and inflate prices worldwide. Regional conflicts and environmental megatrends exacerbate the fragility of food systems. Extreme weather events such as floods, droughts and heatwaves create a demanding environment for agricultural production and livelihoods alike. In sub-Saharan Africa, droughts and armed conflicts are especially challenging.

Recent international reports have confirmed that the path to achieving Sustainable Development Goal 2 (Zero hunger) is off course. While in some regions, such as Latin America and Asia, hunger and food insecurity are gradually decreasing or staying at the same level, in Africa, levels are on the rise and moderate or severe food insecurity reached 59% in 2024, more than double the global average of 28% (FAO et al., 2025). It is projected that this development will accelerate and by 2030, 60% of the chronically undernourished people worldwide will live in Africa.

International development cooperation organisations and bilateral donors distribute about 20 percent of official development assistance (including humanitarian aid) to food security and nutrition (FAO et al., 2024; OECD, 2023). In this regard, German development cooperation also spends approximately 20 percent of its total funding channelled through the Federal Ministry for Economic Cooperation and Development (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung – BMZ) on food security, agriculture and rural development (BMZ, 2025). Therefore, a study of the internationally available evidence on effects related to development cooperation interventions was included in the evaluation programme of the German Institute for Development Evaluation (Deutsches Evaluierungsinstitut der Entwicklungszusammenarbeit).

## Study focus

The present study synthesises evidence from rigorous international impact evaluations, providing German and international development cooperation actors with key findings from these reliable analyses to inform future decision making. Rigorous impact evaluations are based on experimental or quasi-experimental methods that allow for causal connections to be made between the intervention and the identified changes in outcomes.<sup>1</sup> The study was designed to address stakeholder interests and existing gaps in evidence synthesis. Therefore, the study focuses on the effectiveness of **information, capacity strengthening and behaviour change (ICSBC)** interventions. These interventions play an important role in increasing the agency of individuals and communities. Agency – that is the capability to make independent decisions and take action to shape their own lives in line with their goals and values – has only recently been added by the Food and Agricultural Organization of the United Nations (FAO) as one of (now) six dimensions in the definition of food security and nutrition.

In addition, the increasing impact of environmental crises on food security and nutrition highlights the importance of gaining further insights on how interventions can strengthen the **resilience of food systems**. This study uses the FAO et al.'s (2021) definition of food systems resilience: “the capacity over time of agrifood systems, in the face of any disruption, to sustainably ensure availability of and access to sufficient, safe and nutritious food for all, and sustain the livelihoods of agrifood systems' actors”. This definition highlights stability of access and sustainability, which are analysed in depth in this study.

Further, assessment of both the evidence from and the focus of food security and nutrition interventions indicates the value of a regional study focus on **sub-Saharan Africa**. This region faces huge challenges in terms of malnutrition, which is why many development cooperation activities target it. In addition, studies were available for sub-Saharan African countries that had not been synthesised in earlier reviews.

<sup>1</sup> Other research designs cannot rule out that any positive effect found is due to a general positive development beyond the scope of the intervention.

Based on these considerations, the following research questions were formulated:

- What are the effects of ICSBC interventions on food security and nutrition outcomes in sub-Saharan Africa?
- How do these interventions enhance the resilience of food systems against climate change risks and crises?
- How do the effects vary depending on the context, intervention features, vulnerable population groups or other influencing variables?

## Approach

The overarching impact envisaged by any intervention in the field of food security and nutrition is to fulfil the fundamental **human right to adequate food**. This goal is achieved when **six dimensions of food security and nutrition** complement each other (CFS, 2009; FAO, 1996):

1. The **availability** of food
2. The physical, economic and social **access** to food
3. The knowledge and means to consume food that is safe and sufficient to meet physiological needs (**utilisation**)<sup>2</sup>
4. The ability of individuals and communities to secure nutritious food for current and future consumption (**stability**)
5. The capability to make decisions about food production, consumption and related activities (**agency**)
6. The food systems' ability to sustain food security and nutrition without compromising future needs (**sustainability**)

## Information, capacity strengthening and behaviour change

**(ICSBC)** interventions – the focus of this evidence synthesis – can contribute to these six dimensions. Therefore, these dimensions serve as outcome areas in this study. This study is embedded in the FAO's **Sustainable Food System Framework** (see Figure 1 in the report) and focuses on two of the three pathways identified in the framework through which actors can contribute to food security and nutrition: the food supply chains (for example, food storage and distribution activities) and consumer behaviours and diets (for example, the individual's nutrition decisions). The third pathway, food environment (physical, economic, socio-cultural and policy conditions that shape access, affordability, safety and food preferences), and external drivers like political or demographic circumstances are not covered by this synthesis as the rigorous evidence identified has a strong focus on producers and consumers.

Within the two pathways, this study identified 13 intervention types evaluated in rigorous quantitative studies. These include farmer field schools, agricultural extension services and peer-to-peer support. The intervention types represent the various ways in which knowledge can be conveyed and capacities strengthened. For these 13 intervention types, the reported effects on the six outcome areas of food availability, access, utilisation, stability, agency and sustainability were analysed.

<sup>2</sup> As **food utilisation** indicators vary strongly, for the analysis, these were further differentiated as **food diversity** indicators (measures of food composition) and **anthropometrics** (physical measurements of the body – for example, regarding a healthy body weight or growth).

## Methods

For this evidence synthesis, a rapid evidence assessment (a form of systematic review) was conducted, applying both quantitative and qualitative analysis methods.

One of the quantitative methods used was **meta-analysis of effects**, which combines the effects reported in rigorous quantitative studies and calculates a weighted average effect. The meta-analyses included only those studies that applied statistically rigorous (experimental or quasi-experimental) research designs (n = 53). They were identified using the International Initiative for Impact Evaluation's (3ie's) Living Food Systems and Nutrition Evidence Gap Map (EGM) for the years 2000 to 2024. For ICSBC interventions in the food supply chains pathway (targeting producers), most of the identified studies were available. In the meta-analyses, a statistically significant weighted average effect means that the intervention type can be assumed to be effective for the outcome area across different settings. Additionally, a **moderator analysis** was conducted to examine whether effects vary by contextual factors like the duration of exposure to an intervention, the implementation region or the vulnerability of the implementation country to environmental crises.

The **qualitative analysis** comprised of document analysis (n = 192) of: (i) qualitative information on the programmes included in the quantitative studies; and (ii) qualitative information from other relevant documents (for example, evaluation reports and studies by German and international development cooperation and other scientific literature). The purpose was to add in-depth insights on: (i) the role of multicomponent interventions in the effectiveness of capacity strengthening interventions; (ii) the effectiveness of interventions for vulnerable population groups; and (iii) the effect of interventions on resilience. The meta-analyses and moderator analyses were conducted in partnership with 3ie (Lwamba et al., 2025, 2026).

## Findings

Overall, the evidence synthesis confirms the **positive effects of ICSBC interventions on the six food security and nutrition outcome areas**. However, the synthesis does not provide evidence of a single intervention being effective for all outcome areas. Instead, it shows that each intervention type achieves positive effects in distinct outcome areas.

For **food supply chain interventions**, the evidence synthesis shows the following:

- Food supply chain intervention types are associated most often with positive effects on food **availability and access**. This might not be surprising given the strong connection between food supply chains and availability and access. However, the analysis also shows that ICSBC interventions in these pathways do not necessarily contribute to other outcome areas, such as sustainability, agency and utilisation.
- **Farmer field schools** and **agricultural extension services** intervention types are most often found to be effective across the different outcome areas. This justifies the common use of these two intervention types.

For **consumer behaviour interventions**, the evidence synthesis shows the following:

- Consumer behaviour intervention types are most often associated with positive effects on the outcome areas of **food utilisation** – specifically for food diversity – and **agency**. This highlights that consumer-side interventions are more effective than food supply chain interventions for improving food diversity and agency.
- **Community meetings** and **media campaigns** that provide nutrition-related information are the two intervention types which most often show positive effects across the different outcome areas and settings. This highlights the importance of these two very different approaches – one based in the community and the other using media to spread information broadly.

The following table outlines the intervention types that show positive effects on the outcome areas across different settings, as found by the meta-analyses.

**Table 1 Evidence for positive effects of ICSBC interventions by outcome area**

<b>Outcome area</b>	<b>Intervention type with positive effects</b>
<b>Food availability</b>	<b>Food supply chains:</b> Farmer field schools, agricultural extension services, capacity strengthening in storage and distribution
<b>Food access</b>	<b>Food supply chains:</b> Farmer field schools, agricultural extension services, capacity strengthening in storage and distribution <b>Consumer behaviours:</b> Community meetings
<b>Food utilisation: diversity</b>	<b>Food supply chains:</b> Farmer field schools, agricultural extension services <b>Consumer behaviours:</b> Community meetings, healthy eating media campaigns
<b>Food utilisation: anthropometrics</b>	No conclusion possible
<b>Food agency</b>	<b>Food supply chains:</b> Workshops and short trainings, farmer peer-to-peer learning <b>Consumer behaviours:</b> Peer support and counselling, community meetings
<b>Food stability</b>	No conclusion possible
<b>Food sustainability</b>	<b>Food supply chains:</b> Farmer field schools, agricultural extension services

Source: DEval, own visualisation

When it comes to the anthropometric measurements within food utilisation outcomes, as well as for food stability, only few studies were available for analysis. Therefore, meta-analyses could not be conducted for all intervention types. Those meta-analyses which were possible did not generate conclusive findings on intervention effectiveness across settings for these two dimensions.

For intervention types/outcome combinations not presented in the table, single studies often showed significant effects, but the meta-analyses did not confirm these across diverse settings. This highlights that caution is needed when relying on single studies to design interventions. Meta-analyses provide more reliable findings as they combine results across different settings. Moreover, the findings of the meta-analyses show that different ICSBC intervention types are needed to achieve food security and nutrition effectively across dimensions.

ICSBC interventions are often combined with additional components like seed provision or cash transfers. The quantitative analysis did not find any significant results in terms of different effects of **multicomponent interventions** in comparison with single-component interventions. The qualitative analysis, however, shows that combining at least two different components can create more benefits than single-component interventions. These benefits present in three different ways: (i) sometimes, interventions only show a positive effect when combined with other components; (ii) on other occasions, individual components contribute to different areas of food security and nutrition – this supports a combination approach for a more systemic improvement in food security and nutrition; and (iii) there can be efficiency gains from multicomponent interventions – for example, through joint project administration.

Therefore, combining ICSBC interventions with other interventions increases the range of food security and nutrition issues addressed and makes it more likely that positive effects will be observed. However, there is no evidence on whether multicomponent interventions are more effective due to the specific combination of interventions or whether the effects are merely additive. This is due in part to the impact evaluations not disaggregating estimates by components. More differentiated evidence is needed in this respect.

The qualitative analysis also finds that **vulnerable population groups** can only benefit from ICSBC interventions if the root causes of vulnerabilities – in terms of rights, resources and representation – are addressed. One way to achieve this would be to combine ICSBC interventions with in-kind inputs, cash transfers or infrastructure. Consequently, multicomponent interventions play an important role for ICSBC interventions targeting vulnerable population groups. The extent to which ICSBC interventions are beneficial for these groups remains under-examined in rigorous quantitative studies, especially for people with disabilities, older people and indigenous peoples, and in terms of the lack of disaggregated estimates for all groups in impact evaluations.

When it comes to **food system resilience**, the quantitative analysis provides evidence of ICSBC interventions having positive effects on food sustainability (for farmer field schools and agricultural extension services). However, the meta-analyses do not find positive effects for food stability, partly because fewer studies are available. What the analysis does show, though, is that a country's vulnerability to environmental crises reduces the effectiveness of ICSBC interventions for food security and nutrition outcomes and, therefore, diminishes the positive effects on resilience. The analysis also shows that multicomponent or

cross-sectoral approaches increase an intervention's ability to strengthen food system resilience. Enhancing social capital – for example, through building networks – and the perceived strength to cope with the crisis are other important approaches to increasing food system resilience.

### Implications

Overall, the results of the study affirm that realising the right to food is a complex objective of development cooperation. The meta-analyses show the positive effects of ICSBC interventions on food security and nutrition. Moreover, the results across the different dimensions of food security and nutrition highlight that different types of ICSBC interventions complement each other. While for supply chain interventions, there is more evidence of positive effects on food availability and access, consumer-side interventions come into play for the other dimensions, especially food agency. The agency dimension – reflecting the capability of people to take their own decisions regarding the food they consume and produce – is rooted in the principles of the Human Rights-Based Approach.

Combining different components – for example, introducing ICSBC interventions with cash transfers or seed inputs – can offer a more comprehensive approach to improving food security and nutrition across several dimensions. This is especially important for vulnerable population groups. For them, access to resources but also other fundamental rights are prerequisites for ICSBC intervention effectiveness. Additionally, multicomponent and multisectoral approaches stand out as being important for increasing food system resilience. The successful inclusion of vulnerable population groups supports resilience as well. In terms of food stability, a crucial aspect of resilience, the synthesised evidence reveals a lack of rigorous research.

Four implications were derived from these results.

**Implication 1:** ICSBC interventions do not equally show effects across all dimensions of food security and nutrition. Therefore, when planning interventions, development cooperation actors should determine which dimensions of food security and nutrition they prioritise. They should then choose the most suitable type of intervention or a combination thereof for the targeted outcome area. The results of this study can serve as guidance in this regard.

- For example, to achieve a higher availability of and access to food, actors could plan interventions along the food supply chain, such as agricultural extension services or farmer field schools.
- Especially those intervention types which target consumers, such as community meetings or media campaigns providing nutrition-related information, can improve food diversity; peer support, counselling and community meetings primarily improve agency.

**Implication 2:** Since food security and nutrition are comprised of six dimensions, multicomponent interventions and multi-sectoral approaches have proven to be effective for promoting systemic change, especially for vulnerable population groups.

- For example, ICSBC interventions could be combined with financial or in-kind resources; on-farm activities could complement off-farm activities.
- To be more effective, ICSBC interventions for vulnerable population groups should be complemented by activities strengthening their rights and resources, for example through cash transfers, the provision of seeds, and counselling on land rights.

**Implication 3:** To improve food system resilience, the context and design of the ICSBC interventions are key. According to the findings of this study, development cooperation actors should prioritise the following when planning and implementing interventions specifically intended to increase resilience:

- Plan multicomponent interventions or multisectoral approaches. For example, provide the required material and equipment for production like drought-resistant seeds, water and storage facilities.
- Enhance the social capital and agency of individuals and communities. For example, support their capability to decide on food production and consumption. In addition, target the inclusion of marginalised groups to strengthen their social network.

**Implication 4:** Development cooperation actors who commission or conduct rigorous impact evaluations, as well as researchers in the field should increase their focus on food stability. This means they should strive to generate additional knowledge on the effectiveness of ICSBC interventions regarding strengthening the capacity of actors to ensure food security and nutrition in the event of sudden shocks or cyclical/seasonal events.