

# Vegetables in Food Systems for Healthy Diets in Low- and Middle-Income Countries: Mapping the literature

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## Background

- Low vegetable consumption is associated with poorer health, and diets low in vegetables are among the top 5 dietary risk factors, associated with 1.5 million deaths globally per year <sup>1</sup>, yet global production and consumptions is lower than recommendations <sup>2</sup>.
- While we have good conceptual models of how food systems work to provide diets, there is still a need to better understand how food systems can make vegetables in particular available, accessible and desirable to all.

## Research Question

How does research address the role of vegetables in food systems for healthy diets in low- and middle-income countries?

## Methods

We applied the PRISMA guidelines for scoping reviews (PRISMA-ScR) <sup>3</sup> and mapped the literature to the HLPE food systems framework <sup>4</sup> (Figure 1) with additional consideration of:

- Overlaying cross-cutting aspects – i.e. system change & transformation, equality & equity, and issues of rights & agency.
- Expanding the construct of “diets” to include dietary practices, diet quality, and diet contamination.
- Focusing on vegetables to understand how they have been classified, their nutritional & health properties; and their production & processing systems.

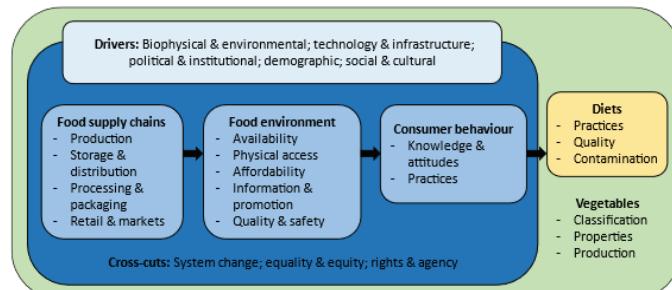


Figure 1 Study framework

**Data Sources:** Searched for peer-reviewed articles only in MEDLINE, SCOPUS and Web of Science on 17th April 2020.

**Search Terms:** Literature explicitly incorporating vegetables, food systems, diets as a nutrition outcome, and LMICs in empirical analyses.

**Selection Criteria:** Publication from January 2000 to April 2020 of all languages.

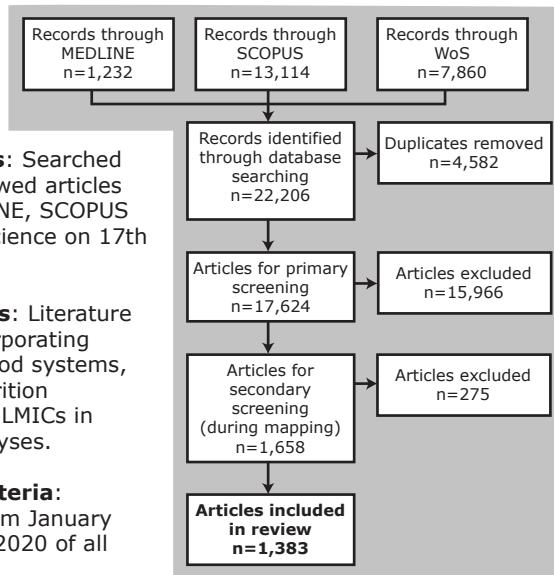


Figure 2 PRISMA flow diagram

## Findings

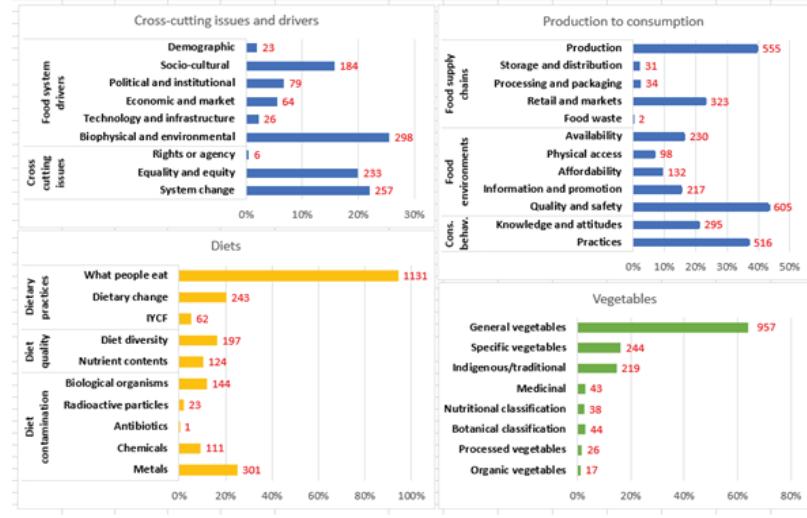


Figure 3 Overview of mapping results across food systems, diets and vegetables  
Note: The bars show the percentage of these 1,383 articles that cover a particular aspect, and the numbers at the ends of the bars show the number of articles. Note that not all totals will add up to 1,383 or 100%, as many articles look at multiple issues or locations.

- No clear changes in researched topics or ways of researching over time, but the topic area has been growing consistently over the past 20 years.
- Most papers used ‘vegetables’ as a food group rather than classifying them through their functional nutritional or medicinal properties. The most common dietary metric was broadly ‘what people eat’ or whether they eat the vegetable food group.

### We suggest more nuance is needed in both dietary and vegetable metrics to look within the vegetables food group.

- Only 86 studies looked at low-income country food systems, and very few studies looked explicitly across country contexts.
- Issues of physical access, and the mid-value chain, were least studied aspects of the food system, and food loss and waste only in one study.

### We suggest more research is needed in these areas.

- Fewer than half of the papers assessed any of the conceptual drivers of food systems, and in particular the demographic and policy drivers were least studied despite clear need to understand these areas.

## Conclusions

This review has revealed gaps in the literature on vegetable food systems for healthy diets in LMICs. We need:

- More ‘systems’ studies that look across the food system from start to finish.
- More studies looking at the impacts of policies and interventions.
- Better attention to equity in dietary outcomes and trade-offs among dietary, livelihood and environmental food system outcomes.

Researchers can build on this review through digging into sub-sets of studies, and working to fill identified research gaps.

## References

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