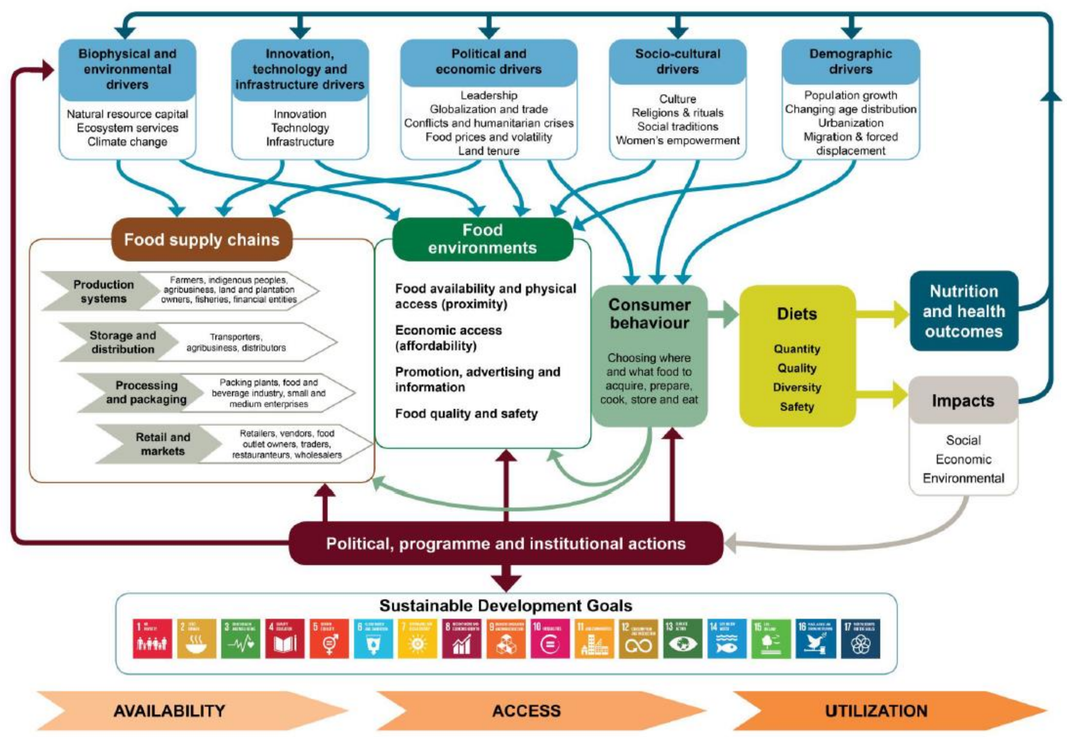
Towards a suite of indicators, metrics and tools for food system-diet analysis
With special emphasis on dietary gap analysis

Laura Trijsburg[1], Aafke Nijhuis[1], Elise Talsma[1], Thom Achterbosch[2], Daniel Mekonnen[2],
Tomas Morley[2], Gina Kennedy[3], Inge D. Brouwer[1]
[1]Wageningen University, [2]Wageningen Economic Research, [3]Bioversity International

MOTIVATION

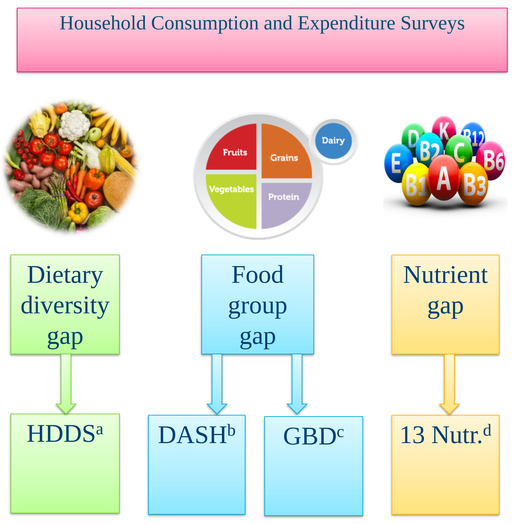
Food systems should provide year-round access to foods that cover people's nutrient needs and promote healthy dietary practices[1]. Poor diets are the main contributors to the multiple burdens of malnutrition[2,3] and promoting healthy diets can help prevent both undernutrition, micronutrient deficiencies and mitigate the rise of overnutrition and diet related non-communicable diseases. Food systems have a key role in delivering high quality diets, but are presently failing to deliver healthy diets to people in lower and middle income countries (LMIC). A food systems approach (see figure 1 with a conceptual framework[4]) will help to pinpoint the problem areas in the food system and could aid in the design of interventions for food system transformations. Identifying focus areas in the food system goes alongside the need for sound metrics to study the quality of diets, the food environment (external and personal – including consumer behavior), the food supply system (production, storage, transport, trade, processing/packaging, retail/marketing) and the drivers (Economic, Social, Environmental, Demographic, Infrastructure) in LMIC. The conceptual framework below serves as a roadmap for the selection of metrics and lays out what needs to be assessed.

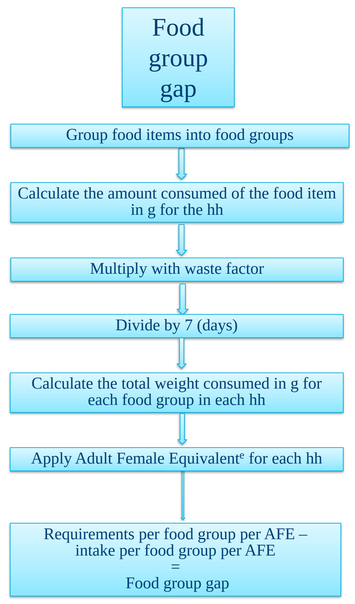
Figure 1 Conceptual framework of food systems for diets and nutrition 4

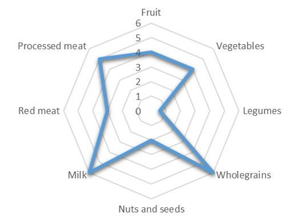


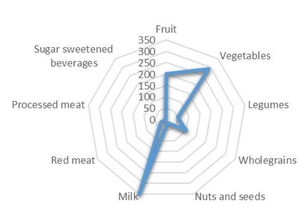
PROPOSED MATERIALS AND METHODS

- Two parallel processes will be followed. For one we will investigate dietary gaps on the level of household dietary diversity, food group and nutrient adequacy, and identify factors that may explain observed differences in food and nutrient intakes for the four A4NH target countries: Ethiopia, Nigeria, Vietnam and Bangladesh. Below the proposed workflow for the data analysis is shown where the food group gap analysis is given in more detail.









a Household Dietary Diversity Score (HDDS), showing economic access to a diverse diet[5]
b Dietary Approaches to Stop Hypertension Diet (DASH)[6]
c Global Burden of Disease (GBD) study[3]
d 13 selected Nutrients[7]
e Adult Female Equivalent (AFE); consumer unit based on energy requirements of female 20-30y[8]

- Alongside the food and nutrient gap analysis, the identification, selection and recommendation, in a rigorous manner, of key indicators for characterising, diagnosis and foresight analysis of food systems in the four key countries will be done. Furthermore a country situation analysis will be performed to identify current country specific knowledge

Literature review
- Food system analysis done for the 4 target countries and identify key research questions
- Indicators used for components of food systems, resulting in a wide set of indicators

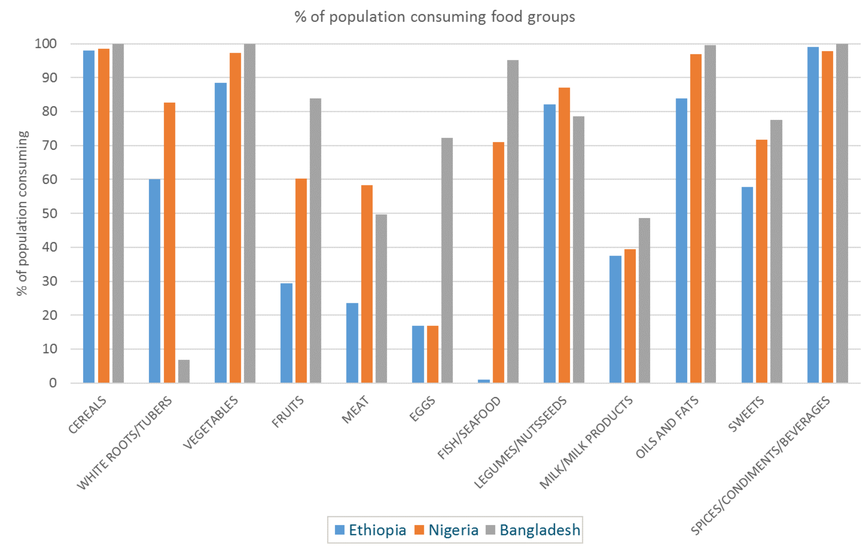
Indicators
- Development of inclusion and exclusion criteria for selection of key indicators (such as validity, comparability, time period, clear methodology, availability of data, etc.)
- Determine portfolio of key indicators for characterising, diagnosis and foresight analysis of food systems

Data analysis
- Building data base for the four key countries
- Carry out food system characterisation, diagnosis and foresight analysis

Data dissemination
- Develop infographics to communicate results
- Develop manuscripts and reports

OUTPUTS AND EXPECTED OUTCOMES

Below the preliminary results on the diversity of 12 HDDS dietary food groups for Ethiopia, Nigeria and Bangladesh (Vietnam data are not available yet) show that, especially for the white roots/tubers, fruits, meat, eggs and fish/seafood groups differences in intake amongst the 3 countries are observed (results of a 7 day recall).



Future outputs and outcomes will present the percentages of households who deviate from the DASH and GBD dietary recommendations, and the magnitude by which they are off the minimum intake. Further, the adequacy of nutrient intake will be shown. We will further relate the nutrition situation with the food environment, including access to-markets, information, roads and other infrastructures that may shape consumption behaviour and drivers of nutrition outcomes for each country by different settings, including location of residence (rural-urban), sub-national and national level, and across income quintiles.

Furthermore an initial start has been made to discuss and define, amongst a group of experts, a recommended set of metrics for assessing diet quality and characterizing food systems (the food environment, food supply system and drivers) across the 4 focus countries. The expected outcome of this ongoing process is a list of indicators for the four domains (Diet quality and health and nutrition outcomes, food environment, food supply system and drivers). In this process the stakeholder engagement in metrics selection is important as it will create awareness, ownership and use of indicators in the analysis of country specific food system and comparative food system analysis.

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