

Overweight and obesity in LMICs in rural development and food systems

A country mapping

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Wageningen Centre for Development Innovation
Wageningen, June 2023

Report WCDI-23-237

Herens, Marion, Hermine ten Hove, Olga Pérez Cardona, 2023. *Overweight and obesity in LMICs in rural development and food systems; A country mapping*. Wageningen Centre for Development Innovation, Wageningen University & Research. Report WCDI-23-237. Wageningen.

This report combines the results of an exploratory country mapping commissioned by IFAD on overweight and obesity. Overweight and obesity rates across low and middle income countries (LMICs) are approaching levels found in higher-income countries, with prevalence on the rise in urban and rural areas. So far, little research has been done on the role of food systems in addressing overweight and obesity and the control of diet-related diseases in rural areas of LMICs. The country mapping covers five countries: Bolivia, Egypt, Indonesia, Nigeria and Zambia. For each country, available evidence on policies and intervention strategies that have the potential to prevent and/or reduce overweight and obesity were reviewed and validated in stakeholder consultations. Findings were mapped against a food systems framework, and enabling factors and barriers were identified for interventions aiming to mitigate the rising incidence of overweight and obesity. The study results show that food system-related interventions are not specific to overweight or obesity. Instead, they tap into the wider theme of making diets more healthy and nutritious. They emerge as necessary strategies to set the scene for creating non-obesogenic food supply chains. The identified intervention strategies involve different food system domains, including production strategies for improved dietary diversity, processing, changing the food environment and addressing consumer behaviour. The study concludes that there is a gap in the evidence of what works and what does not due to inadequate monitoring and data flaws relating to overweight and obesity. This is combined with a skewed focus on urban population groups, and a food and nutrition security agenda that still focuses largely on undernutrition and micronutrient deficiencies, which does not reflect an actionable agenda on the triple burden of malnutrition.

Keywords: food systems, drivers, overweight, obesity, value chains, rural, LMIC, interventions

This report can be downloaded for free at <https://doi.org/10.18174/632623> or at www.wur.eu/wcdi (under knowledge products).



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Acknowledgements

This report brings together the results of an exploratory study on overweight and obesity in five countries in low and middle income countries (LMICs). The authors would like to sincerely thank IFAD country offices of Bolivia, Egypt, Nigeria, Zambia and Indonesia for their active engagement in this country mapping. This support has proven to be indispensable for concluding the work successfully. We would like to thank IFAD Country Directors and IFAD staff especially for their support in providing relevant documents and for engaging their partners and key stakeholders in the consultation workshops. We are very grateful to all the participants for their contributions during the workshops and for the open dialogues that took place on overweight and obesity. All views have been incredibly helpful to complement the available information sources and have enriched this study's findings.

Furthermore, we would like to thank IFAD for giving us the opportunity to carry out this study. We would like to thank Ilaria Bianchi, Joyce Njoro, Sinafikeh Gemessa, Fatimatou Binetou Diarriyatou Sourang, Maria Elena Mangiafico, Victoria Wise and Meray Arnouk for their active engagement throughout the project, their contributions and their feedback. We would also like to thank Giovanna Del Greco for ensuring operational flexibility, which was very helpful.

List of abbreviations and acronyms

BMI	Body Mass Index
COPD	Chronic Obstructive Pulmonary Disease
COSOP	Country Strategic Opportunity Programme
DEF	Development Effectiveness Framework
FAO	UN Food and Agricultural Organisation
FMARD	Federal Ministry of Agriculture and Rural Development [Nigeria]
FSN	Food Security and Nutrition
GDP	Gross Domestic Product
GHO	Global Health Observatory
HIC	High Income Country
HLPE	High Level Panel of Experts on Food Security and Nutrition
IDR	Indonesian rupiah
IFAD	International Fund for Agricultural Development
JME	Joint Malnutrition Estimates
KAP	[Improved Nutrition] Knowledge Attitudes and Practices
LMIC	Low and Middle Income Country
MDDW	Minimum Dietary Diversity for Women (aged 15–49)
NAP	Nutrition Action Plan
NASR	National Action on Sugar Reduction
NCD	Non-Communicable Diseases
NEN region	Near East, North Africa, Europe and Central Asia region
OECD	Organisation for Economic Co-operation and Development
PDRs	Project development reports
PMU	Project Management Unit
RIMS	Results and Impact Management System
SBCC	Social Behaviour Change Communication
SDG	Sustainable Development Goal
SECAPs	Social Environment, climate assessments procedures
SMSEs	Small and Medium Sized Enterprises
UNICEF	United Nations International Children’s Emergency Fund
USD	US dollar
WB	World Bank
WCDI	Wageningen Centre for Development Innovation, Wageningen University & Research
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization
WUR	Wageningen University & Research

Executive summary

Introduction

This report brings together the results of an exploratory country mapping, which was commissioned by IFAD on overweight and obesity. Overweight and obesity rates across low and middle income countries (LMICs) have approached levels found in higher-income countries¹. While overweight and obesity are more prevalent in urban areas, their prevalence is also on the rise in rural areas. Overweight and obesity are generally viewed from a public health perspective rather than a food systems one. Hence, little research has been conducted on the role of food systems in addressing overweight and obesity, and on the control of diet-related diseases in rural areas of LMICs.

Methods

The country mapping covered five countries, which represented five regions: Bolivia, representing Latin America and the Caribbean (LAC); Egypt, representing the Near East, North Africa, Europe and Central Asia (NEN); Indonesia, representing Asia and the Pacific (APR); Nigeria, representing West and Central Africa (WCA) and Zambia, representing East and Southern Africa (ESA).

The research questions addressed were:

- What are the main drivers of overweight and obesity in rural areas?
- What interventions in the selected countries are there with the potential to prevent and/or reduce overweight and obesity in the different areas of the food system?
- What nutrition sensitive interventions are there for IFAD's target groups?
- What are existing good practices, and what constraints are there to intervention strategies for overweight and obesity?

For each country, available evidence on policies and intervention strategies with the potential to prevent and/or reduce overweight and obesity were reviewed and validated in stakeholder consultations. Findings were mapped against a food systems framework and enabling factors and barriers for interventions aiming to mitigate the rising incidence of overweight and obesity were identified.

Prevalence of overweight and obesity

Based on analysis in the respective countries, overweight and obesity start at an early age, and they increase with age, particularly in countries where prevalence is already high, such as in Bolivia and Egypt. Differences between sexes become more prominent with increased age, especially from the age of 20 years onwards, in some countries, such as Egypt, women are two times more likely to be obese compared to men. Consistent data on overweight and obesity across different age groups representing rural and urban areas were not found. Monitoring overweight and obesity prevalence in children is not standard practice in all countries either.

¹ <https://apps.who.int/gho/data/view.main.BMI25AWBv?lang=en>

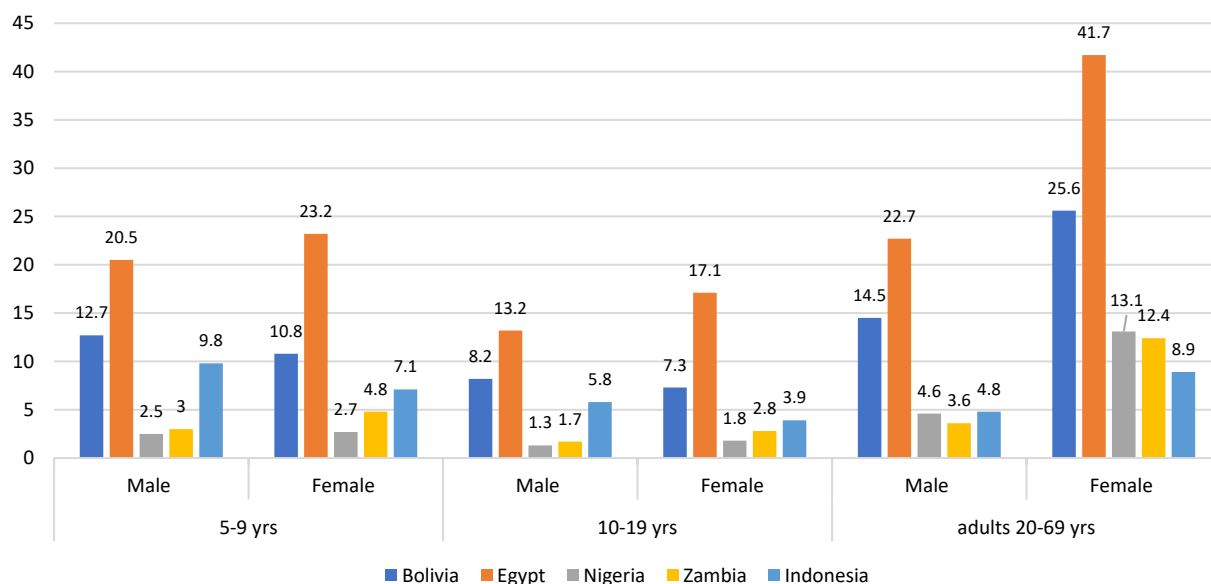


Figure S1 Prevalence obesity (%) (BMI >=30)
Data: Global Health Observatory – WHO (2016).

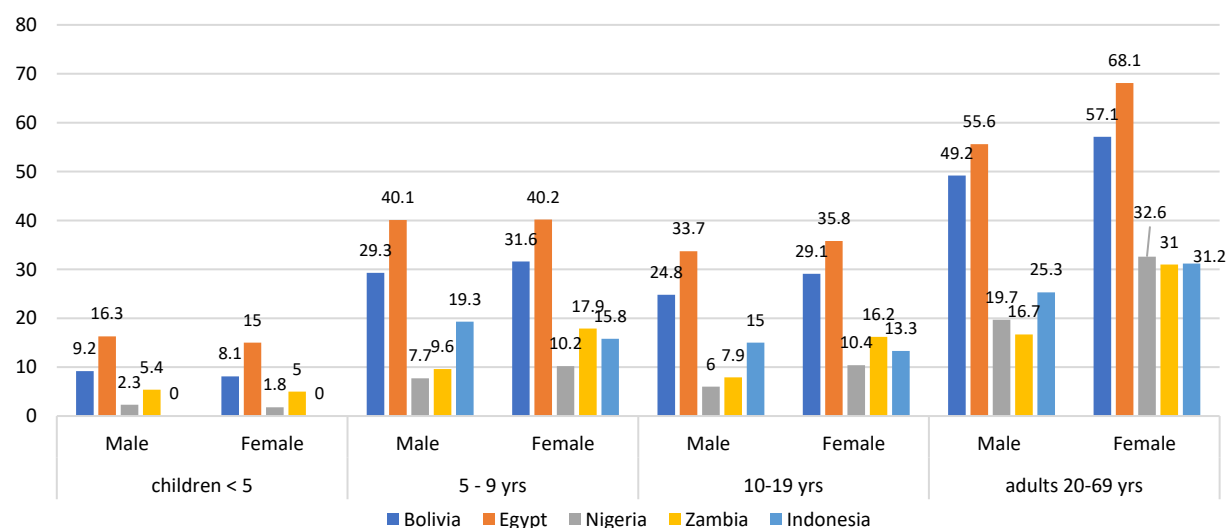


Figure S2 Prevalence of overweight (%)
Children and adolescents, BMI > +1 standard deviations above the median (crude estimate) (%); adults BMI >=25
Data: Children < 5: Bolivia, DHS 2008; Egypt, DHS 2014; Nigeria, DHS 2018; Zambia, DHS 2018; Indonesia, DHS 2017 (no data); Children >5, adolescents and adults: Global Health Observatory – WHO (2016).

Policy context

In all five countries, three main policy areas were identified relating to malnutrition, including overweight and obesity, and emerging issues were highlighted in some countries, although not all.

Food and nutrition policies and strategies

Existing food and nutrition policies, and national strategies that are generally the responsibility of the ministries of health or general affairs (Prime Minister’s office), are a seemingly obvious starting point for identifying strategies addressing overweight and obesity. However, this was only observed in countries where prevalence was already very high, such as Bolivia, Egypt and Indonesia. Based on the reviewed documents, food and nutrition policies that aim to optimise the nutrition status of the population focus on

strategies and action plans for reducing stunting and wasting in children, and improving food security, food sovereignty and dietary diversity. The strategies and national action plans mainly emphasise nutrition education, development and updating food based dietary guidelines and strengthening nutrition services and surveillance.

Non-Communicable diseases and health

The countries' rationale for addressing overweight and obesity were generally embedded in strategies and action plans on the prevention and control of Non-Communicable Diseases (NCDs). The World Health Organisation (WHO) Global Action Plan for the Prevention and Control of NCDs provides member states and international partners with a map and menu of policy options that will contribute to progress on the nine global NCD targets². All the national strategies reviewed were grounded in this WHO Global Action Plan, except in Bolivia where the five-year Plan of Action for the Prevention of Obesity in Children and Adolescents served as an umbrella framework. The review revealed that in the domain of health, policies on the prevention and control of NCDs, as well as in strategies and action plans relating to overweight and obesity, the focus was on the modifiable behavioural risk factors. The focus was on aspects like improved nutrition, healthy diets, improved health and nutrition services, and surveillance, for example. There was also a certain level of focus on emphasising the cost-effectiveness of nutrition interventions and the need for multisectoral collaboration.

Agriculture and Food Security Policies and Strategies

Agriculture and food security policies were generally under the jurisdiction of the ministries of agriculture, which worked with various other line ministries. These policies were primarily aimed at achieving food and nutrition security for all population groups. In this policy domain, strategies mainly focused on sufficiency and self-sufficiency in staple food production, on the promotion of nutrition sensitive value chains and dietary diversity in production and consumption, on the promotion of bio-fortified food (production and consumption), and on food prices as well as affordability (including food subsidy schemes).

Main drivers of overweight and obesity

The main drivers of overweight and obesity identified across the five countries include the following: food insecurity, urbanisation, dietary and lifestyle transition, socio-economic (income, education) and cultural factors, wealth status, obesogenic diets, poor dietary diversity, lack of physical activity, and poor maternal, foetal and infant nutrition. Gender-related differences are manifest. Adult women are more often overweight or obese compared to their male peers. In-country differences were reported, especially in Bolivia and Egypt. How geographical factors influence overweight and obesity, however, is an area in need of further exploration. Although the main drivers appear the same at first glance, countries seem to differ in how much a particular driver matters. In Egypt, for example, urbanisation, sedentary lifestyles and technological developments are often described together in relation to the high prevalence of overweight and obesity. However, the rise in rural areas is currently higher. It is important to look at multiple clusters of drivers and determinants of overweight and obesity when developing intervention strategies.

Interventions identified across the food system

The study results show that food system-related interventions are not overweight or obesity specific. Instead, they tap into the wider field of making diets more healthy and nutritious, and emerge as necessary strategies to set the scene for creating non-obesogenic food supply chains. The identified intervention strategies cut across different food system domains: there were production strategies for improved dietary diversity, strategies for processing (which involved food package labelling or price mechanisms), strategies for changing the food environment and strategies to address consumer behaviour.

² <https://www.who.int/europe/multi-media/item/9-global-targets-for-noncommunicable-diseases-for-2025>

Food supply chain interventions in production

Food supply chains play a central role in food systems for delivering nutritious foods to consumers at affordable prices while shaping the food demand. It is within this rationale that contributions from interventions in the food supply chain can be expected to contribute to addressing overweight and obesity as well as undernutrition and food insecurity. The main intervention strategies identified in the production subsystem relate to:

1. Encouraging nutrition-sensitive agriculture for improved dietary diversity, such as the promotion of vegetable and fruit production (all countries, traditional food production (e.g. quinoa in Bolivia), and organic production);
2. Encouraging bio-fortified food production (strategy to fill the nutrient gaps), such as Vitamin A in maize, cassava, sweet potato (in the African countries), and zinc and iron (in wheat, rice);
3. Encouraging household production, such as homestead gardening (all countries, including small livestock production (e.g. in Zambia)).

Food supply chain interventions in storage, trade, processing, retail and marketing

The main intervention strategies identified in the transport, trade and processing subsystem focused on processing, retail and marketing components, predominantly addressing dietary quality. The main intervention strategies identified were:

1. Encouraging regulations and food standards to reduce the use of unhealthy ingredients (sugar/sweetener, sodium, trans fats, etc.) in the processing stage. These interventions included reducing the use of fats in Egypt and Nigeria and regulating price mechanisms (e.g. sugar taxes in Egypt, Nigeria and Indonesia);
2. Encouraging increased market supply of fortified foods with adequate micronutrients, such as iron in bread (Egypt), iodised salt (multiple countries), vitamin A fortified palm oil (Indonesia);
3. Encouraging provision or reviewing food and nutrition facts labelling. This is mandatory in some countries (Bolivia, Egypt, Indonesia) and has a particular focus on nutrition information relating to processed foods and unjustified health claims;
4. Updating food composition tables, such as introducing new or updated analyses to include 'new' or not previously analysed nutrients and adjusted for fatty acid analysis (Egypt).

Food Environments

Food environments refer to the physical, economic, socio-cultural and policy conditions that shape access, affordability, safety and food preferences. The main intervention strategies mentioned in relation to overweight and obesity were:

1. Encouraging food availability and access to food for selected groups. These include food subsidies (there were long established programmes in Egypt, but they were also found in Indonesia and Bolivia), school feeding programmes (all countries) and school gardening (Nigeria and Zambia);
2. Encouraging the provision of information and guidelines, and the implementation of referral schemes. These included nutrition education programmes in school environments (all countries), formulation and implementation of food-based dietary guidelines (all countries) and the implementation of school-based referral schemes for overweight children to the health system (Egypt);
3. Encouraging conducive policy conditions, especially focusing on multisectoral policy and action, and advocacy for healthy diets (all countries).

Consumer behaviour

Consumer behaviour encompasses the entire food-based process, from acquisition to consumption. It reflects all the choices and decisions made by consumers, at the individual, household and collective levels. It involves what food is acquired, stored, prepared, cooked and eaten, and how waste is disposed of. In view of overweight and obesity, the identified consumer behaviour intervention strategies are related mostly to healthy diets and dietary practices. They are not directly related to targeted interventions for overweight and obesity. Consumer behaviour intervention strategies largely involve the following:

1. Encouraging awareness-raising about what food to acquire and where. These included public campaigns and community-based interventions (all countries). These were often targeted at urbanising areas, food consumption surveys (Egypt), work place campaigns (Egypt) and private sector driven initiatives that involved embracing a healthy lifestyle as a business model;
2. Encouraging good dietary practices in food handling, mostly addressing food preparation in relation to dietary moderation, especially reduced use of fat, sugar and salt (all countries);

-
3. Raising awareness of the impact of food and lifestyle choices, mainly focusing on messages about healthy diets and healthy, active lifestyles, highlighting the importance of physical activity.

Enablers and barriers to intervention strategies for overweight and obesity

Enabling factors that supported intervention strategies for overweight and obesity were as follows. The convening power of international dialogue, such as the Nutrition for Growth Summit and the UN Food System Summit dialogues, and political leadership that supports agenda-setting. Both of these fed into increasing awareness about overweight and obesity in LMICs. Furthermore, existing policy and institutional arrangements and established multistakeholder arrangements between national and international actors were identified as helpful for exploring and implementing appropriate strategies and interventions. Lastly, accessible and available information, data and tangible assets (facilities, staff, finance) were identified as enhancing intervention strategies, but their absence was flagged as a serious constraint.

Constraining factors for intervention strategies for overweight and obesity were: incoherent policy, lack of political drive, lack of donor interest, and poor or malfunctioning multilevel collaboration. The industry's promotion of highly processed food products or not complying with regulatory frameworks that favoured healthy diets were a concern because they influence trends in food supply, food suppliers' behaviour and consumer behaviour. Lack and poor use of information and data was identified as a constraint. It was aggravated by the fact that interventions addressing overweight and obesity have thus far been scattered and skewed to urban areas. Lastly, existing cultural beliefs and habits, particularly relating to physical appearance and physical activity, were mentioned as seriously hampering the effectiveness of interventions.

Conclusion

To date, there has been little coverage of existing programmatic interventions tackling overweight and obesity through agriculture and food systems transformation and the effectiveness of the employed strategies. There is a gap in the evidence on what works and what does not. The prevalence of overweight and obesity is not consistently or systematically monitored in LMICs. The food and nutrition security agenda largely focuses on undernutrition and micronutrient deficiencies. This does not reflect an actionable agenda on the triple burden of malnutrition. In addition, the rise of overweight and obesity in rural areas is not recognised as unique yet. This is possibly because it goes against the understanding urbanisation as a major driver of changing consumption patterns and lifestyles associated with the widespread increase in Body Mass Indexes (BMIs), and overweight and obesity rates worldwide. This makes it an area in dire need of a clear research agenda and further exploration.

Part I – Country Mapping

1 Introduction

1.1 Background

Poor nutrition comes in multiple forms: undernutrition, micronutrient-related malnutrition, and overweight and obesity. The Joint Malnutrition Estimates (JME) published in April 2021 reported that, globally, 149.2 million children under five years of age were stunted (chronically or recurrently undernourished), 45.4 million wasted (suffering from acute and severe weight loss) and 38.9 million were overweight. While countries are making progress towards the reduction of undernutrition, the world continues to see a rise in overweight and obesity (UNICEF, WHO, & Worldbank, 2021). Overweight and obesity have now emerged as a global challenge, affecting high income and low and middle income countries alike (see Figure 1 and 2).

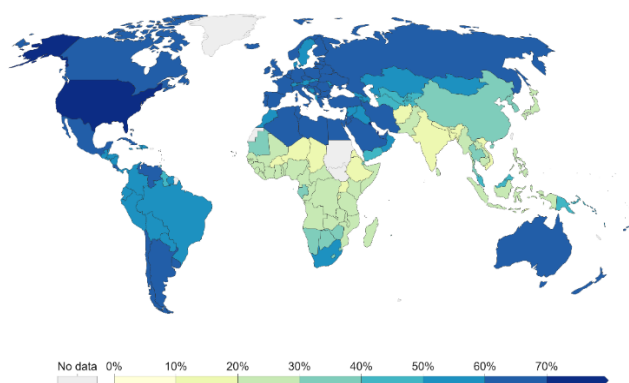


Figure 1 Share of overweight or obese adults (2016)
Source: Our World in Data/Global Health Observatory – WHO 2016.

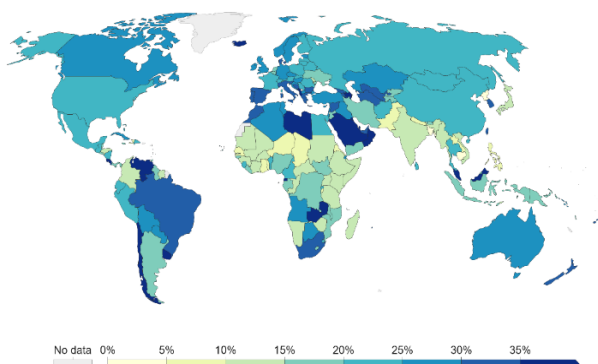


Figure 2 Share of overweight children (2016).

In addition, disparities between and within countries are substantial. While overweight and obesity are more prevalent in urban areas, their prevalence is also on the rise in rural areas. A 2014 study in low and middle income countries found that, in a third of all countries surveyed (33%), overweight in women in rural areas is increasing in comparison to past decades at a rate greater than in urban areas (Jaacks, Slining, & Popkin, 2015a, 2015b). This shift is strongly associated with increased national Gross Domestic Product (GDP). These trends towards overnutrition, however, do not negate the need to address problems of undernutrition. Undernutrition (underweight and/or micronutrient deficiencies) can occur alongside overweight/obesity and

diet-related noncommunicable diseases (the double or triple burden of malnutrition). These can co-exist at the individual, household, community and population level, and across the life course.

There is a growing body of literature that looks at the vast disparities in nutritional status, ranging from undernutrition and micronutrient deficiencies to overweight and obesity; these disparities exist between people, communities and countries from a systems perspective (Nisbett, 2019). The World Health Organization (WHO) identifies unhealthy diets as one of the behavioural risk factors that can cause overweight and obesity, which in turn increases the risk of NCDs. Indeed, three of the four most common NCDs are diet-related, namely cardiovascular diseases, certain forms of cancers and diabetes (Global Nutrition Report, 2020). It is estimated that 77% of deaths from NCDs occur in low and middle income countries (LMICs), meaning obesity is no longer a challenge unique to high income countries (World Health Organization, 2021b).

Today, two interrelated and dominant conceptual sets of frameworks still guide most of the research and policy work on food and nutrition. Public health and international development specialists generally build on the conceptual framework for malnutrition developed by UNICEF (Black et al., 2013; Unicef, 1990). Within agricultural research and food and agriculture policy, nutritional outcomes are subsumed within a wider set of models focusing on food security, nutrition and on healthier diets (HLPE, 2017, 2020; IFPRI, 2016). For this study, adult overweight and obesity refers to an adult who is too heavy for their height. In adults, overweight is defined as a BMI of 25 or more, whereas obesity is a BMI of 30 or more (World Health Organization, 2021a). Childhood overweight refers to a child who is too heavy for their height, and is clinically established if a child's weight (kg) for height (cm) exceeds +2 SD of the WHO Child Growth Standards median (UNICEF et al., 2021).

1.2 Purpose and scope of the country mapping

Nutrition is embedded in IFAD's Strategic Framework (2016–2025). IFAD committed itself in its twelfth replenishment cycle (2022–2024) to improve the nutrition of 11 million people and to have 60% of its new projects designed to be nutrition sensitive (IFAD, 2016b). The Nutrition Action Plan (NAP, 2019–2025) guides IFAD's efforts to mainstream nutrition in a way that aligns with its mandate and comparative advantage (IFAD, 2019f). Addressing the problems of overweight and obesity using a more comprehensive approach to nutrition complies with the aims and strategies of IFAD's mainstreaming nutrition in agriculture and food systems investments.

At the country level, it can help IFAD and its partners to better orient and underpin the development of Country Strategies and Opportunities Programmes (COSOPs) and it supports nutrition sensitive investments. Currently, in the countries where IFAD is active, overweight and obesity are generally viewed by governments from a public health rather than a food systems perspective. The root causes of overweight and obesity, however, are complex with a myriad of factors at multiple levels that directly and indirectly affect nutrition outcomes. Addressing these issues therefore requires a multi-level approach with active involvement of multiple sectors, including agriculture and other sectors throughout the value chains.

Against this background, the scope of the country mapping is to explore how IFAD currently contributes to food system transformations at the country level and how this can help mitigate the rising incidence of overweight and obesity in low and middle income countries through reviewing IFAD's portfolio of loans and grants, collecting information about interventions and approaches used by other actors in the countries of interest and by consulting selected stakeholders in the countries of interest. The country mapping aligns with and is complementary to a comprehensive literature review on overweight and obesity in LMICs. The review describes the drivers of overweight and obesity in rural areas of LMICs and intervention strategies that use a food systems perspective (Ten Hove H., Guo, Bakker, & Herens, 2023). Undertaking a mapping and context-specific exercise that accompanies the comprehensive literature review on drivers and interventions addressing overweight and obesity could more specifically inform the agriculture and food systems investments in the selected countries.

The overall objective of country mapping is to deepen the understanding of how agriculture and food value chains can contribute to addressing overweight/obesity and how IFAD can apply these insights in its investments. The country mapping covers selected countries in each of the five IFAD regions: Latin America and the Caribbean, West and Central Africa, East and Southern Africa, the Near East, North Africa and Europe, Asia and the Pacific.

1.3 Outline of the report

Part I presents the consolidated country mapping. The current chapter (Chapter 1) provides an introduction to the background, purpose, scope and theoretical orientation of the country mapping. Chapter 2 describes the methodology. Chapter 3 explores the countries' contexts regarding overweight and obesity prevalence. Chapter 4 presents the national policies and strategies relating to overweight and obesity. Chapter 5 presents the interventions identified to tackle overweight and obesity. Chapter 6 presents the enablers and barriers for overweight and obesity interventions. Chapter 7 describes the findings of the stakeholder mapping and explores ways for advancing the agenda on overweight and obesity in agriculture and rural development. Chapter 8 presents reflections and conclusions. Part II presents the country case profiles, providing more details on overweight and obesity prevalence, drivers and policy context.

2 Methodological approach

This chapter describes the methodological approach used in the country mapping study. To capture specific contexts, the country mapping builds on a systematic approach outlining the different steps taken (James, Randall, & Haddaway, 2016), provided in Figure 3. The High Level Panel of Experts (HLPE) Sustainable Food Systems Framework is used to map the findings of the country mappings across the selected countries, to highlight country policy and current interventions strategies (Appendix 1).

2.1 Mapping process

Step 1 Identification of focal countries

The initial selection of the countries and key elements for review were done as part of the inception phase (Herens, Bakker, ten Hove, & Guo, 2022). A quick scan was developed based on prevalence of overweight and obesity in the five IFAD Regions. Criteria for inclusion defined in consultation with IFAD were prevalence of overweight and obesity, country income classification, size of population, IFAD's portfolio in country (volume of nutrition-sensitive investment programmes, upcoming project designs or COSOPs), explicit in-country (policy) interest for overweight and obesity, and representation of different contexts or regions. For operational purposes, a final round of consultations with IFAD staff at regional and country level was held to assess feasibility (e.g. access to information and data sources) and willingness to participate in the study of the selected countries, which determined the final selection of countries (Table 1).

Table 1 Countries included in the country mapping.

IFAD Region	Country
Asia and the Pacific	Indonesia
East and Southern Africa	Zambia
Near East, North Africa, Europe and Central Asia	Egypt
West and Central Africa	Nigeria
Latin America and the Caribbean	Bolivia

Step 2 Setting the scope

Setting the scope for the country mapping was based on the study protocol and defined research questions (Table 2). Based on Step 1, a further set of inclusion criteria was formulated for the document review, mainly grey literature, including national policy documents, reports and studies on overweight and obesity, academic articles, country profiles (income, demographics, socio-economic development) and IFAD programme documentation. The protocol outlined in Figure 3 guided the mapping exercise in the different countries. The Sustainable Food Systems Framework (HLPE, 2017, 2020) provided guidance for data collection, analysis and reporting of the findings.

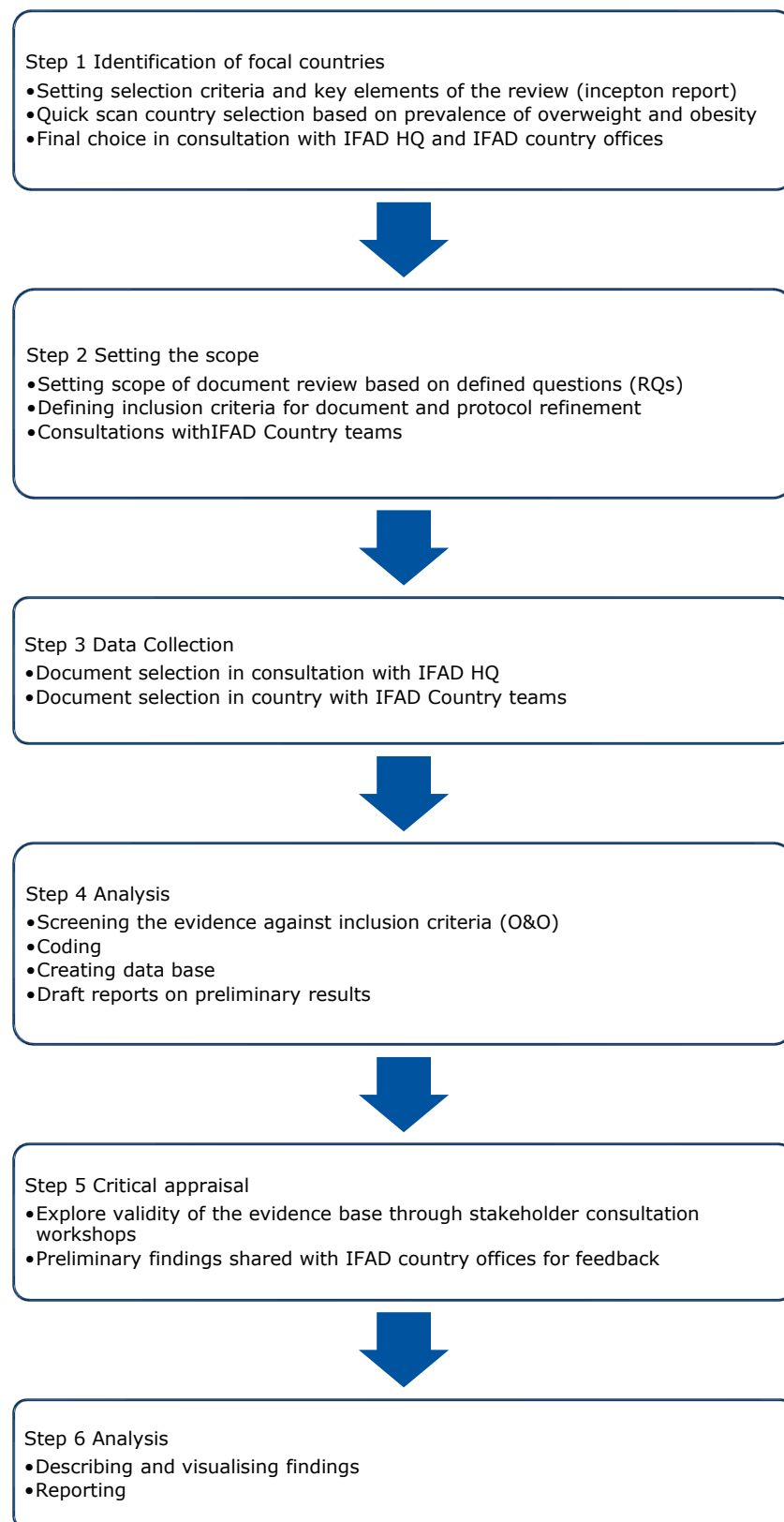


Figure 3 Process description of country mapping approach.

Step 3 Data collection

Relevant documents and information sources were collected for the five selected countries to explore ongoing actions and intervention strategies in the domain of overweight and obesity. For each country, 15 to 40 documents were included for review (Appendix 2). Consultations were held with IFAD regional technical specialists on nutrition and IFAD country teams to, first, collect complementary country-specific information

on interventions and approaches used for addressing overweight and obesity, and second, to get support for accessing data sources and key informants for the focus group discussions in each country.

Data sources analysed included:

- Programme documents for IFAD portfolios of loans and grants: COSOPs, project development reports (PDRs), social environment, climate assessment procedures (SECAPs);
- National and sub-national policy and strategy documents, and corresponding action plans: national food and nutrition security policies, national policies for the prevention of non-communicable disease, health education strategies, food-based dietary guidelines and dietary guidelines;
- Secondary sources: demographic health surveys/standardised monitoring and assessment of relief and transitions (SMART surveys), nutrition profiles, multiple indicator cluster surveys, household expenditure and income surveys, food systems dashboards, consumption surveys, the WHO STEPwise approach to noncommunicable disease risk factor surveillance (STEPS) surveys³, cost of healthy and affordable diet analysis;
- Country-specific peer reviewed scientific articles on overweight and obesity;
- Any additional documents resulting from applying the snowballing⁴ techniques.

Step 4 Analysis

- All retrieved documents were analysed using NVivo 12 qualitative analysis software. Relevant excerpts from the articles were coded according to a predefined coding list that was based on the review questions (attached as Appendix 3). The coded passages were used to answer the research questions (1–5) as presented in Table 2.

Table 2 Overview of research questions and selected methods for the country mapping.

Research Questions	Document review	Stakeholder consultations	Stakeholder mapping
RQ1 What are the main drivers of overweight and obesity in rural areas?	x	x	
RQ2 What interventions in the selected countries are there that have the potential to prevent and/or reduce overweight and obesity in the different areas of the food system?	x	x	x
RQ3 What nutrition-sensitive interventions are there related to overweight and obesity for IFAD target groups?	x	x	
RQ4 What are existing good practices (enablers) and constraints (barriers) to intervention strategies for overweight and obesity?	x	x	x

Specifically, the coded excerpts were used to describe:

- Country-based context characteristics relating to overweight and obesity;
- Ongoing/known policies and intervention strategies in the countries, and apparent entry points for food system interventions, including enablers and potential constraints;
- Drivers of overweight and obesity, and
- Potential key actors and platforms for IFAD-funded projects to advance the obesity and overweight agenda in agriculture and rural development.

Step 5 Critical appraisal

Following the desk-based document review, an online semi-structured stakeholder consultation was organised in each country, except Indonesia⁵. This was done to present the preliminary findings of the document review to key informants working at the nexus between agriculture, food systems and health promotion with the government, United Nations, donor community, research, academia, civil society and private sector. The interactive sessions were attended by 12–18 participants in each country and were

³ <https://www.who.int/publications/m/item/standard-steps-instrument>

⁴ Snowball sampling or chain-referral sampling is defined as a non-probability sampling technique in which the samples have rare traits. This is a sampling technique, in which existing subjects provide referrals to recruit samples – in our case documentation - required for a research study (Naderifar, Goli, & Ghaljaie, 2017)

⁵ The workshop in Indonesia did not materialise because it could not be organised within the defined timeframe of the country mapping

facilitated by two researchers. Whenever necessary, they were conducted in the country's native language (in the Arabic and Spanish speaking countries).

The topics discussed were as follows.

- Reflections on and appraisal of the initial findings.
- Complementary information on ongoing or upcoming interventions addressing malnutrition issues, with a particular focus on those addressing overweight and obesity.
- Enablers and barriers for addressing overweight and obesity in the realm of agriculture and food systems.
- Collecting information on key actors working on overweight and obesity, including an assessment of their roles.
- Reflections on the recommendations for potential entry points to integrate solutions to tackle overweight and obesity in COSOPs and investment projects.

Online dialogues were captured using Google Jam board. This was done to enable feedback for participants and further analysis. Recordings of the stakeholder consultation session (Zoom software) were also used. These outputs were analysed using the same coding as was used for the documents.

Step 6 Reporting

This current report reflects the findings of the country mapping.

3 Exploring countries' contexts

This chapter introduces the selected countries: Egypt, Nigeria and Zambia represent the different IFAD regions in Africa; Indonesia represents Asia and the Pacific, and Bolivia represents Latin America and the Caribbean (Figure 4). It provides brief contextual overviews and explores the nutritional contexts to find answers relating to the main drivers of overweight and obesity in rural areas in these countries.

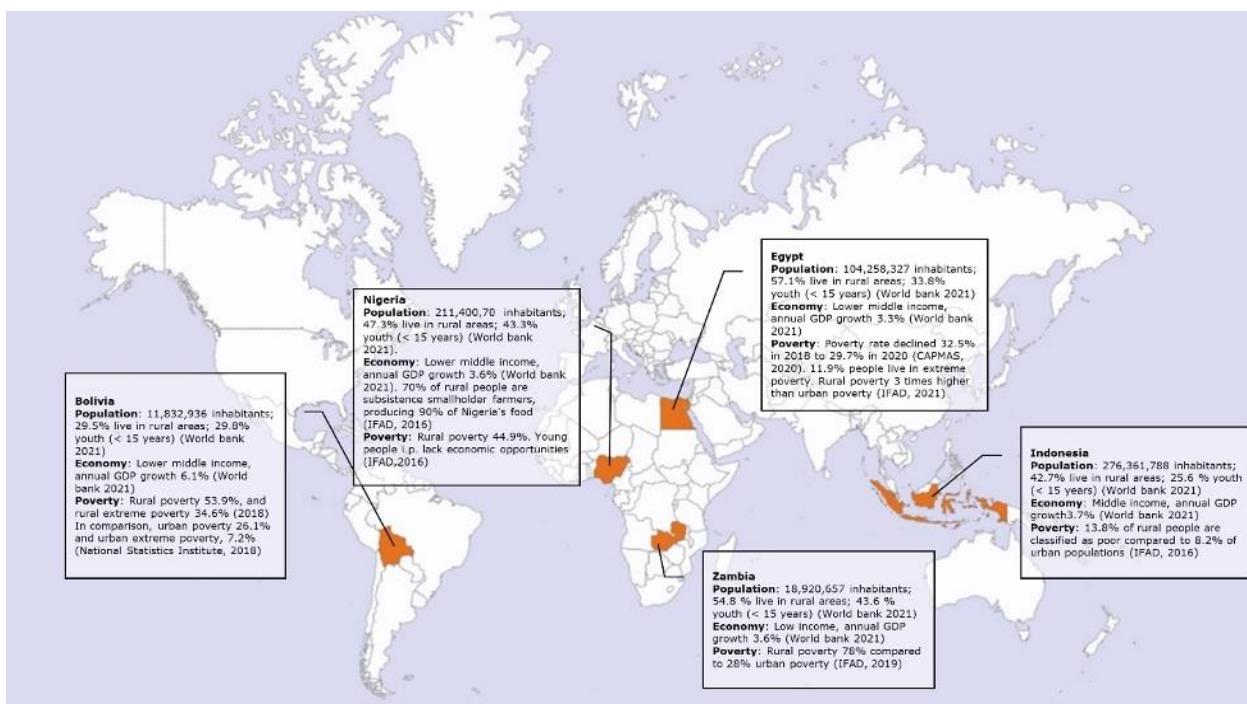


Figure 4 Country contexts for the selected countries in the review on overweight and obesity.

3.1 Profiling overweight and obesity

Global data bases were explored to provide a more general background on the developments in overweight and obesity in the five countries. Looking at the development of daily supply of calories per person over the past decades in the five selected countries (Figure 5), it is noteworthy that Zambia had the highest daily supply of calories per person in 1961 and the lowest in 2018. It is the only country where the daily supply of calories per person did not increase between 1961 and 2018. In Egypt and Indonesia, the daily supply of calories has increased since 1961, in Nigeria, since the 1990s. All five countries seem to have stabilise since 2010 and the latest date of measurement (2016).

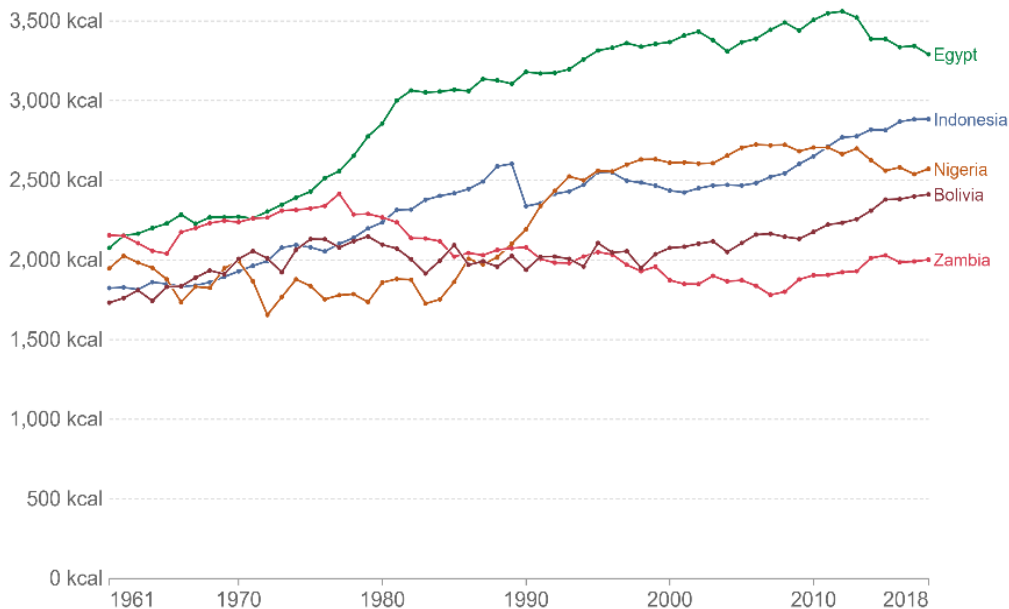


Figure 5 Daily supply of calories per person, 1961–2018
 Daily per capita caloric supply measured in kilocalories per person per day
 Source: Our World in data based on the UN FAO & historical sources.

In contrast, looking at the trend in the development of obesity (similar data on overweight were not included), an ongoing gradual increase of obesity in all countries can be observed (Figure 6), with Egypt having the highest levels. This suggests that more factors are at play than just the daily supply of calories in whatever form, such as changing lifestyles and shifting dietary patterns. Looking at the relation between obesity and the countries' GDPs – a core indicator of economic performance and commonly used as a broad measure of average living standards or economic wellbeing (OECD, 2013) – economic wellbeing seems to have more predictive power for obesity prevalence, more strongly so in Egypt and Bolivia than in Indonesia (Figure 7). This might be explained by evidence provided by Fox, Feng and Asal (2019), indicating a curvilinear relationship between GDP per capita and BMI. Among lower income countries (e.g. Egypt and Bolivia), economic growth predicted increases in BMI whereas in high income countries, higher GDP predicted lower BMI. Indonesia, as a middle income country, might find itself at a tipping point in this regard.

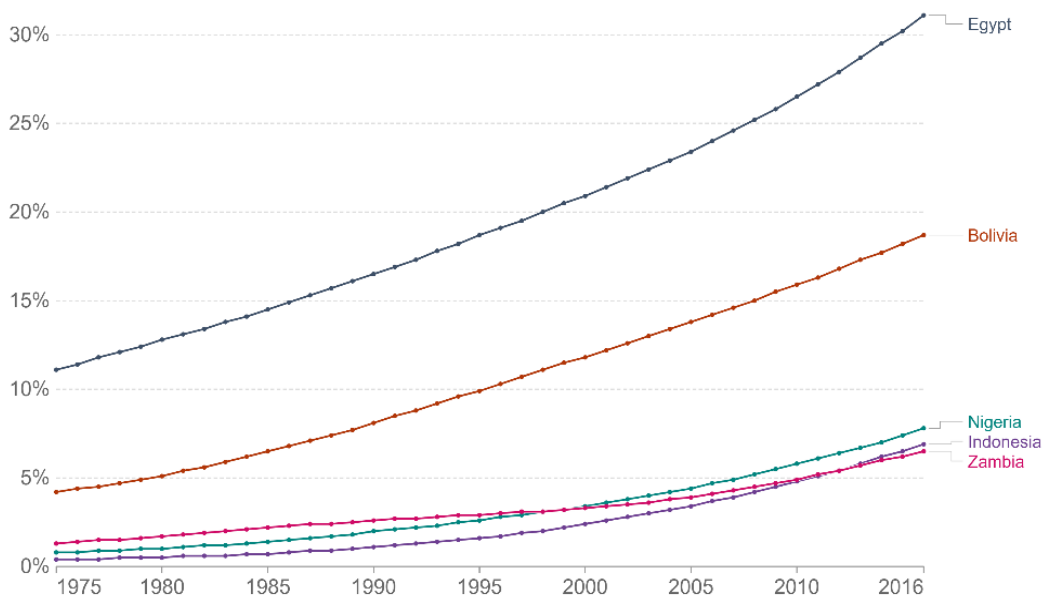


Figure 6 Share of adults that are obese, 1975 to 2016; BMI ≥ 30
 Source: Our World in data – Global Health Observatory – WHO (2022).

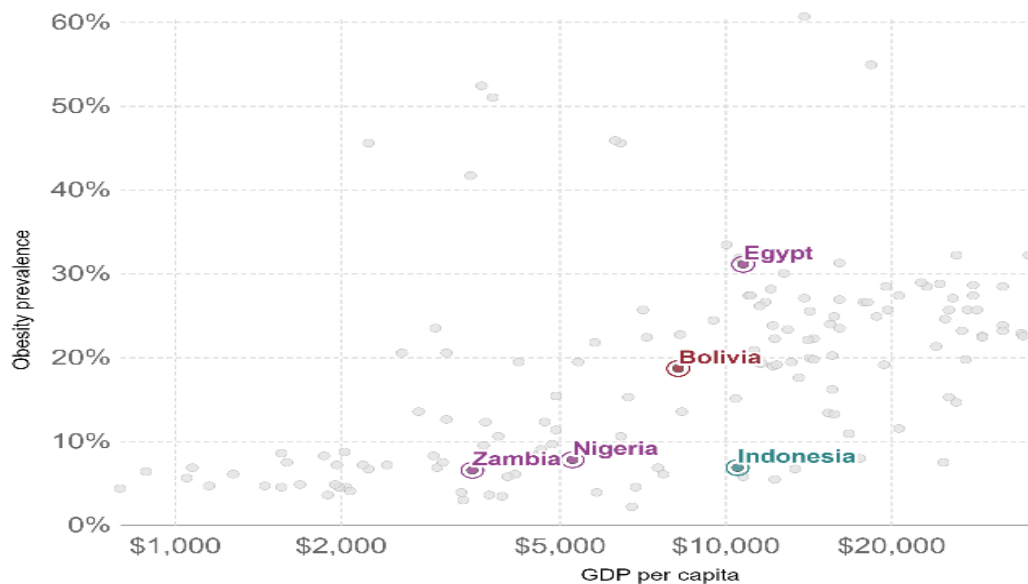


Figure 7 Share of adults that are obese vs. GDP per capita (2016)
 BMI >=30; GDP per capita measured in constant international \$
 Source: Our World in data – Global Health Observatory – WHO (2016), World Bank.

Figures 8 and 9 present a compilation of generic data about the prevalence of overweight and obesity, respectively, in the five countries, drawn from global data bases. What can be observed from these data is that overweight and obesity prevalence increase with age, and that differences between the sexes are more prominent with increased age, from 20 years of age onwards. Women showed a higher prevalence in overweight and obesity compared to men. Another observation is that, in the countries with a high prevalence of overweight and obesity, it started at an early age in both boys and girls.

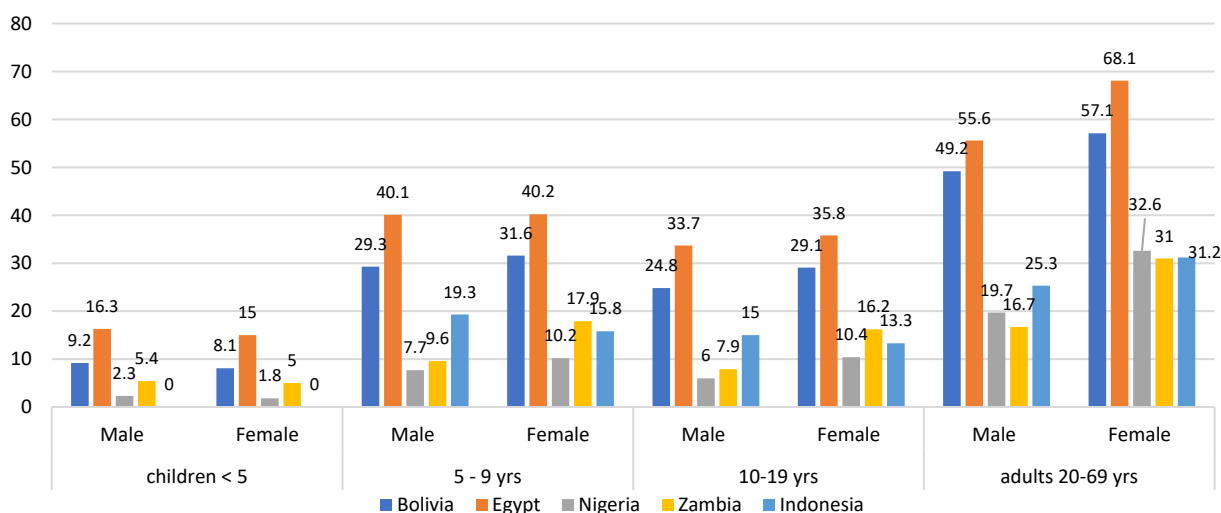


Figure 8 Prevalence of overweight (%)
 Children and adolescents, BMI > +1 standard deviations above the median (crude estimate) (%); adults BMI >=25
 Data: Children < 5: Bolivia, DHS 2008; Egypt, DHS 2014; Nigeria, DHS 2018; Zambia, DHS 2018; Indonesia, DHS 2017 (no data); Children >5, adolescents and adults: Global Health Observatory – WHO (2016).

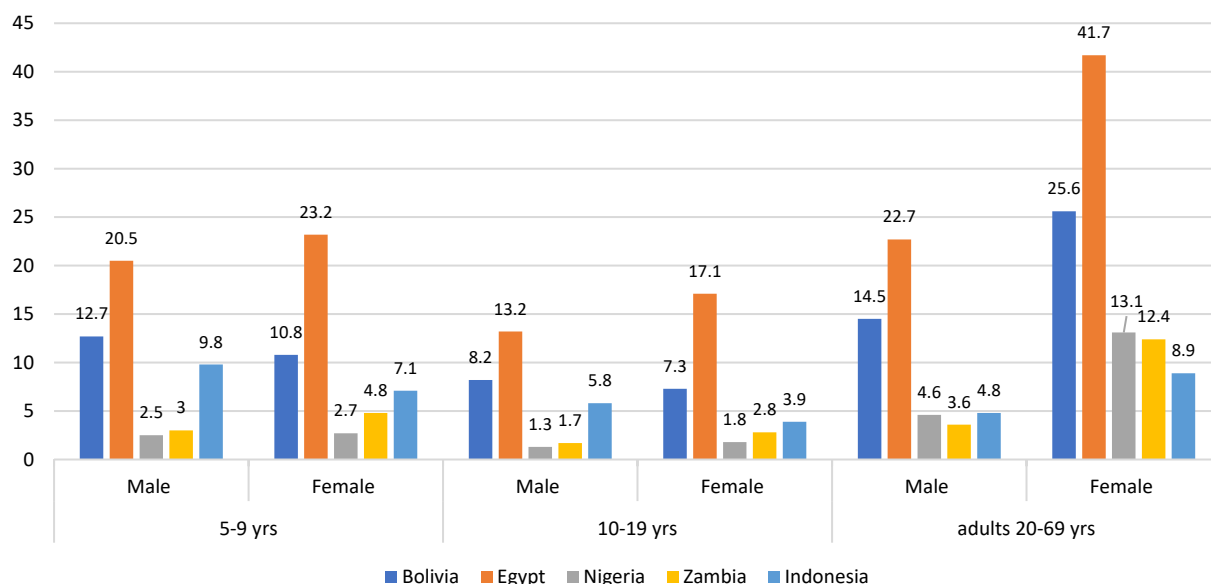


Figure 9 Prevalence obesity (%) (BMI ≥ 30)
 Data: Global Health Observatory – WHO (2016).

Based on the document review and stakeholder consultations, further information was collected on developments relating to overweight and obesity in each country to complement information on globally available data. This was done to identify in-country or rural/urban differences, other types of disparities and related drivers (see Part II: Country Case Profiles).

In brief, increasing prevalence of overweight and obesity were reported in all five countries. This has been taking place in Egypt and Bolivia for a few decades already, but it has only started more recently in Nigeria and Zambia. This trend runs parallel to persistent undernutrition problems at the household level, especially stunting and micronutrient deficiencies.

In-country differences are common. In Bolivia, for example, most schoolchildren presented a normal nutritional status in both urban and rural areas, with higher prevalence of overweight and obesity found in urban areas and higher prevalence of undernutrition in rural areas (Ruegenberg Jerez, Olmos Aliaga, & Jimenez Soria, 2020). However, evidence also showed overweight and obesity on the rise in rural areas. In Bolivia, studies have shown that in high altitude municipalities, such as La Paz and El Alto, there is a higher prevalence of obesity and overweight in people over 35 years of age, especially in women (Soto, 2018). In Egypt, rural body weight has been rising over the past few decades. The increase in obesity rates appears to be much higher for rural areas jumping from about 15% in 1992 to 44% in 2015, while the increase in obesity rates for the urban population went from 36% to 51% (Abay, Ibrahim, & Breisinger, 2020). In Indonesia, overnutrition was more prevalent in urban than in rural areas. Among adults, the 2018 Riskesdas data showed that 18% of rural adults were obese compared to 25% of adults in urban areas (Agency of Health Research and Development, 2018; Arif, Isdijoso, Fata, & Tamyis, 2020; Kementerian PPN & Bappenas, 2021; Ministry of Health, 2019). Consistent disaggregated and gender sensitive data on overweight and obesity that allowed for comparisons of rural and urban areas for the different age and gender groups were not identified in this study.

3.2 Drivers of overweight and obesity

A myriad of drivers were found across the five countries for overweight and obesity (RQ 1). Table 3 presents an overview of drivers identified by countries based on the document review and stakeholder consultations. The main drivers identified were food insecurity, urbanisation, dietary and lifestyle transition, socio-economic (income, education) and cultural factors, wealth status, obesogenic diets (high in sugars and fat, low in micronutrients) and poor dietary diversity, lack of physical activity, and poor maternal, foetal and infant

nutrition. There were also gender-related differences: adult women were more often overweight or obese compared to their male peers. In-country differences were reported, especially in Bolivia and Egypt, but evidence on how geographical factors influence overweight and obesity is scarce.

Although the main drivers appear to be the same, countries seem to differ in how much a particular driver matters. In Egypt, for example, urbanisation, sedentary lifestyles and technological developments are often described together in relation to the high prevalence of overweight and obesity, yet the rise in rural areas is currently higher (Abay et al., 2020). It is important to look at several clustered drivers and determinants of overweight and obesity when developing intervention strategies.

Table 3 Identified drivers across countries.

Driver		Country				
		Bolivia	Egypt	Nigeria	Zambia	Indonesia
Socio-economic conditions	Poverty – low income	x	x	x	x	x
	High(er) income		x	x		x
Educational level	Low	x	x	x	x	x
	High		x			x
Diets	Poor quality diet	x	x	x	x	x
	Poor food quantities				x	x
	Dietary transition (to processed foods)	x	x	x	x	x
Market conditions	Food availability				x	x
	Food pricing	x	x	x	x	x
	Trade policy		x			
	Food subsidies		x			
Lifestyle	Urbanisation	x	x	x	x	x
	Sedentary behaviour		x			x
	Poor physical activity environments	x	x		x	x
	Technology and modernisation	x	x	x	x	x
Agricultural production	Low agricultural production		x		x	
	Climate related vulnerabilities		x			
Nutritional status	Low birth weight	x	x	x	x	x
	Early childhood undernutrition	x	x	x	x	x
Socio-psychological conditions	Stress		x			
	Domestic violence	x	x			x
	Low self esteem		x			
Cultural aspects & social norms	(Gender related) Body perceptions		x	x	x	x
	Physical activity habitual behaviour	x	x			x
	Dietary patterns & eating habits	x	x	x		x
Media	Advertisements (unhealthy food, lifestyle)	x	x	x	x	x
Political & institutional	Policy inertia			x	x	
	Donor inertia		x	x	x	x
	Lack of (capacity in) health infrastructure	x	x	x	x	x

3.3 IFAD's country strategies

IFAD has been active in each of the selected countries for several decades, with an extensive portfolio of programmes and loan projects that aim to support inclusive rural transformation to enable rural people to reduce poverty and achieve sustainable livelihoods, summarised in Figure 10.

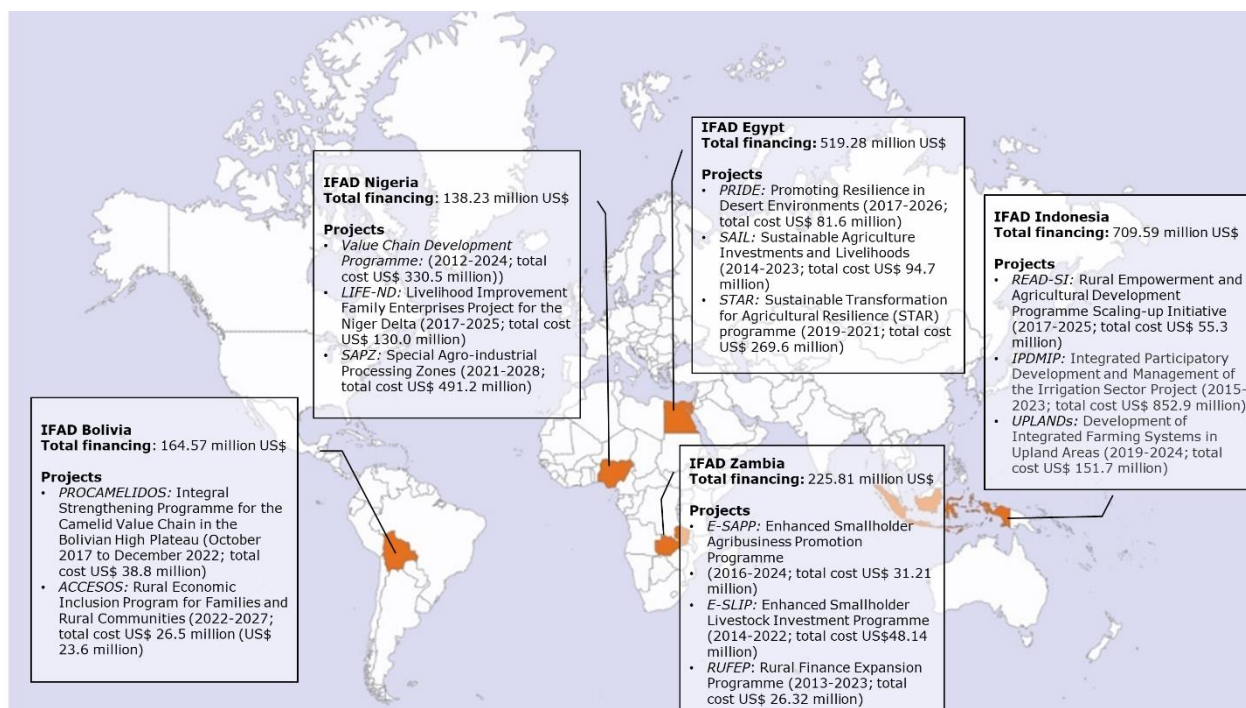


Figure 10 Overview IFAD projects and investments by country.

In the five selected countries, IFAD has established itself as one of the leading partners in agricultural development with a relative advantage in ensuring that smallholder producers and marginalised groups are more resilient, better integrated into supply chains, and have access to services, technologies and finance.

In order to build an understanding of nutrition-sensitive interventions related to overweight and obesity for IFAD target groups (RQ2), a review was done of IFAD documentation (see Appendix 4) for each of the countries. Looking at alignment with IFAD’s Nutrition Action Plan and its defined strategies for mainstreaming nutrition, the COSOPs can be considered nutrition-sensitive: country diagnoses presented contextualised nutrition facts and related drivers (IFAD, 2016a, 2016d, 2018a, 2019b, 2020a, 2020d). Overweight and obesity were mentioned specifically in the national strategies of Bolivia and Egypt, where the prevalence is highest. The Egypt COSOP put particular emphasis on the possible link between food subsidies and poor nutrition in relation to obesity rates, which is treated as subject of policy analysis in conjunction with the Government (IFAD, 2018a).

At the project level, strategies were reviewed to capture elements of mainstreaming nutrition. These generally emerged as strategies and actions for nutrition-sensitive agriculture, and a variety of interventions aimed to enhance dietary diversity at the household level. These included income degeneration, nutrition education campaigns and community initiatives to address food insecurity and malnutrition issues in many projects, although not all. Table 4 provides an overview of IFAD mainstreaming nutrition in COSOPs and investment projects by country. Only the Sustainable Transformation for Agricultural Resilience (STAR) programme in Egypt explicitly flagged the rise in overweight and obesity, particularly in women in the target areas (IFAD, 2020h). Operational strategies at project level included addressing food security and nutrition by increasing home produce, dietary diversity, enhancing livelihoods and household incomes, and nutrition education targeting small holder farmers and rural populations, particularly women and youth (IFAD, 2013, 2015a, 2016d, 2018a, 2019b, 2020d). Table 3 presents an overview of the different strategies deployed in the five countries.

Table 4 IFAD mainstreaming nutrition in COSOPs and investment projects by country.

IFAD strategies	Bolivia	Egypt	Nigeria	Zambia	Indonesia
Country Goal (COSOP)	Contribute to improving the contribution of smallholder producers, reducing rural poverty and strengthening food security (IFAD, 2020d)	Contribute to the sustainable improvement of rural incomes and resilient livelihoods (IFAD, 2018a)	Support the development of a rural economy in which the targeted population can derive prosperity and equal benefit from economic growth (IFAD, 2016a)	Increase the incomes, food security and nutrition of poor and vulnerable rural people through inclusive, sustainable, diversified and climate-resilient rural livelihoods (IFAD, 2019b)	Support inclusive rural transformation to enable rural people to reduce poverty and achieve sustainable livelihoods (IFAD, 2016d, 2020a)
Mainstreaming nutrition	Goal: Not specified; improved nutrition defined as cross cutting theme Actions: Form institutional partnerships; strengthen existing regulatory frameworks and current policies. Adopt a food sovereignty approach, including strengthening sociocultural factors, overcoming sociocultural limitations to food consumption, purchasing power; improve the accessibility and quality of food, and develop a strong production system. This includes training and awareness-building activities in nutrition education and productive diversification (IFAD, 2020d)	Goal: Not specified Actions: Address issues of malnutrition and nutrition-sensitive agriculture through ongoing projects, with a view to continuing through future intervention. Address nutrition aspects through targeted gender interventions and provisions. Strengthen improved nutrition and livelihood practices in the Matrouh Region with partners (UNICEF, WFP, others) (IFAD, 2018a)	Goal: Not specified Actions: Scaling up project approaches in fortifying food; data collection and analysis, knowledge-sharing, and advocacy for nutritional inclusion; working with partners on nutrition education (IFAD, 2016a)	Goal: Develop efficient nutrition-sensitive agricultural value chains that increase the participation of smallholder farmers in markets and create employment opportunities.(strategic objective 2) (IFAD, 2019b) Actions: Support development of nutrition-sensitive value chains; agricultural commercialisation and diversification to address income and nutrition needs (IFAD, 2019b)	Goal: 10% reduction in the prevalence of chronic child malnutrition in projects' households Actions: Support development of nutrition sensitive value chains; smallholders' inclusion in value chains to accommodate food security and nutrition objectives; raising awareness on good nutrition practices, community empowerment for behavioural changes, crop diversification for balanced food consumption; improved storage and processing. Collaboration with the World Food Programme to leverage their work on vulnerability mapping and nutrition education will be pursued (IFAD, 2016d)
Target groups	(i) vulnerable rural households (ii) women and woman-headed households; (iii) youth; (iv) indigenous peoples (v) persons with disabilities	(i) Poor rural households (ii) women and woman-headed households; (iii) youth; (iv) displaced people	(i) smallholder farmers (women and men); (ii) women and woman-headed households; (iii) youth	(i) smallholder farmers (women and men); (ii) youth	(i) smallholder farmers (women and men); (ii) smallholder fisheries producers; (iii) women and woman-headed households; (iv) marginal communities and ethnic minorities (selected geographic areas); (v) youth

IFAD strategies	Bolivia	Egypt	Nigeria	Zambia	Indonesia
Nutrition mainstreaming strategies	PRO-CAMELIDOS – Integral Strengthening Programme for the Camelid Value Chain in the Bolivian High Plateau: No specified nutrition strategies. Awareness raising activities/workshops organised on nutrition education and productive diversification, especially with youth and women (IFAD, 2018b, 2020b, 2021b)	PRIDE – Promoting Resilience in Desert Environments: Investments on multiple nutrition aspects: Household water harvesting structures; dams and levelling land for improved livestock husbandry; cisterns for human water consumption; income generation activities for women; promotion of home gardens; literacy and nutrition education services (schools and health clinics); construction of latrines. Development and implementation of an integrated health and nutrition BCC package to be layered on top of all project interventions (IFAD, 2021a)	VCDP – Value Chain Development Programme: Implement biofortification programme for cassava (vit A); Support nutrition education; support home gardens; women’s empowerment; Strengthen fortified cassava processing techniques (IFAD, 2012b)	E-SAPP – Enhanced Smallholder Agribusiness Promotion Programme: Transform rural smallholder farmers from subsistence production to commercial levels; Implement a food gap analysis to develop a nutrition strategy; Develop training modules addressing (i) production of enriched products (ii) food safety; (iii) pesticide management; (iv) tracking and management of food waste and food loss; Conduct nutrition survey (IFAD, 2019d) (IFAD, 2019d, 2021d) (IFAD, 2022b)	READ-SI – Rural Empowerment and Agricultural Development Programme Scaling-up Initiative: Enable improved household incomes and through improved productivity and profitability of farm and non-farm activities and better management; Enable improved household finances and nutrition; adopt improved mother and child nutrition behaviours; set-up integrated homestead gardens (IFAD, 2017b) (IFAD, 2019g, 2020e)
	ACCESOS Rural – Rural Economic Inclusion Programme for Families and Rural Communities: No specified nutrition strategies. While creating opportunities for small farmers to strengthen their organisational and productive infrastructure, improvement of nutrition will be promoted (IFAD, 2019a)	SAIL – Sustainable Agriculture Investments and Livelihoods: Improve food security and nutrition and reduce poverty through increase in farm and off-farm income, investments in education, health, WASH, and strengthening collaborative partnerships (IFAD, 2018f, 2019i, 2020g, 2020h, 2021h)	LIFE-ND – Livelihood Improvement Family Enterprises Project for the Niger Delta: Promotion of planting of pro-nutrition commodities; home garden activities; training centres in local communities; awareness raising on nutritional balance for rural agri-business and ensuring that final commodities sold are safe and nutrient-rich (IFAD, 2017a)	E-SLIP – Enhanced Smallholder Livestock Investment Programme: Development of a nutrition strategy (incl. Implementation budget); nutrition lab to build capacities among PMU staff and project stakeholders; and Nutrition sensitive messages to promote kitchen gardens, diet diversification (IFAD, 2021a)	IPDMIP – Integrated Participatory Development and Management of the Irrigation Sector Project: No specified nutrition strategies. Overall goals; improve food security, income, and livelihoods for 900,000 poor rural smallholder households (IFAD, 2018c, 2019e, 2020c, 2021c)
		STAR – Sustainable Transformation for Agricultural Resilience: Aims to address nutrition, including obesity, through improved diets: support increased production of healthy food; nutrition awareness training; nutritional assessment at baseline; support community engagement and outreach with partners (WFP). STAR prioritises commodities with higher nutrition improvement potential in addition to market and income generation potential (IFAD, 2020h)	SAPZ – Special Agro-industrial Processing Zones: Improve nutrition through increasing incomes and women’s empowerment, especially WRA; sensitise women on nutrition via farmer organisations and/or mass media; promote integrated home gardens for diverse nutritious commodities (IFAD, 2021g)	RUFEP – Rural Finance Expansion Programme: Improve nutrition through improved livelihoods of the rural poor through sustainable economic growth; mainstream nutrition in micro/rural finance; nutrition education training based on FBDG for SBCC (IFAD, 2014, 2016e, 2017c, 2018d, 2018e, 2019h, 2020f, 2021f). (IFAD, 2021c)	UPLANDs – Development of Integrated Farming Systems in Upland Areas: Ensure pursuit of evidence-based nutrition sensitive value chain approaches; ensure increased availability of nutritious foods, e.g. training on nutrition and food processing (IFAD, 2019c, 2022a)

4 National policies and strategies relating to overweight and obesity

This chapter describes the policy context surrounding overweight and obesity in each country. A set of policy documents, national strategies and action plans were reviewed to build an understanding of potential policy entry points and food systems measures (RQ2) to address overweight and obesity and their relation to IFAD's target groups (RQ3). The documents reviewed cover the areas of food and nutrition, non-communicable diseases and health, and agriculture and food security. In all five countries, three main policy areas were identified relating to malnutrition, including overweight and obesity, which were more explicitly emerging issues in some countries.

4.1 Food and nutrition policies and strategies

Existing food and nutrition policies and strategies in the countries, which are generally under the direction of the ministries of health or general affairs (Prime Minister's office), are a seemingly obvious starting point for identifying strategies that address overweight and obesity. These were observed in countries where prevalence was already high (>10% childhood obesity), such as Bolivia, Egypt and Indonesia.

In Bolivia, food and nutrition policies and strategies are underpinned by its constitution, which recognises the right to food security and food sovereignty. The established regulatory framework included efforts and resources to guarantee food security involving three thematic areas: national agricultural production, access to healthy food, and the promotion of healthy consumption habits (Nogales, 2019, 2021). In Egypt, the National Food and Nutrition Policy and Strategy (2007–2017) (World Health Organization, 2007, 2015) was in the process of being updated. This was being done in recognition of the nutritional challenges and considering the Egyptian Government's commitment to realise the Sustainable Development Goals. This process was assisted by the United Nations Food Systems Summit⁶ and the Nutrition for Growth Summit⁷ in 2021. In Indonesia, the current Food and Nutrition Action Plan 2021–2024 explicitly embraces the topic of obesity and the multisectoral policy approach needed to translate the different strategies into various policy areas. It sets out overweight and obesity specific targets for 2024. National priority is placed on the acceleration of community nutrition improvements (BAPPENAS, 2021; Kementerian PPN & Bappenas, 2021). The National Policy on Food and Nutrition in Nigeria aims to attain optimal nutritional status, with particular emphasis on the most vulnerable groups, such as children, adolescents, women, elderly and groups with special nutritional needs. By 2025, with a view to overweight and obesity, the policy seeks "To prevent and control chronic nutrition-related noncommunicable diseases" (Federal Republic of Nigeria, 2017). In Zambia, the current National Food and Nutrition Strategic Plan (NFNSP) acknowledges the risk of overweight and obesity in parallel to undernutrition, although it emphasises interventions that prevent stunting and undernutrition, particularly targeting children under two years of age (National Food and Nutrition Commission, 2017).

In brief, food and nutrition policies that aim to optimise the nutrition status of the population are mainly focused on reducing stunting and wasting in children and improving food security, food sovereignty and dietary diversity. Furthermore, the strategies and national action plans emphasised nutrition education, development or updating food based dietary guidelines and strengthening nutrition services and surveillance. Following the UN Food Systems Dialogues in 2021, strategic national pathway documents for food systems transformation were developed in all countries.

⁶ <https://www.un.org/en/food-systems-summit/documentation>

⁷ <https://nutritionforgrowth.org/events/>

4.2 Non-Communicable diseases and health

The countries' rationales for addressing overweight and obesity were generally embedded in strategies and action plans on the prevention and control of Non-Communicable Diseases (NCDs). Overweight and obesity constitute a risk factor to various NCDs, such as cardiovascular disease, diabetes, COPD (Chronic Obstructive Pulmonary Disease) and cancer. Unhealthy diets are generally considered as a modifiable behavioural risk factor to NCDs. Since 2013, the WHO Global Action Plan for the Prevention and Control of NCDs has provided member states, international partners and the WHO with a menu of policy options which can contribute to progress on the nine global NCD targets⁸ (Table 5) (World Health Organization, 2013). The national strategies reviewed for this study all referred to this WHO Global Action Plan, except in Bolivia where the five-year Plan of Action for the Prevention of Obesity in Children and Adolescents served as umbrella framework (Pan American Health Organization, 2015).

Table 5 Global targets for Non Communicable Diseases for 2025.

Mortality and Morbidity
1. A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory disease
Behavioural risk factors
2. At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context
3. A 10% relative reduction in prevalence of insufficient physical activity
4. A 30% relative reduction in mean population intake of salt/sodium
5. A 30% relative reduction in prevalence of current tobacco use
Biological risk factors
6. A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances
7. Halt the rise in diabetes and obesity
National systems response
8. At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes
9. An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs in both public and private facilities

In Bolivia in 2016, NCDs were estimated to account for 64% of all deaths (45,900 in total). Of these deaths, 27% were related to obesity. In Egypt, NCDs were estimated in 2015 to account for 85% of all deaths (World Health Organization, 2015), and obesity was identified as a major contributor to the development of diabetes mellitus (in nearly three quarters of all cases), hypertension, obstructive sleep apnoea and fatty liver (Aboulghate et al., 2021). The Egyptian National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases 2017–2021 (EgyptMAP-NCD) included risk reduction and health promotion targeting overweight and obesity by specifying initiatives to promote healthy diets (high in fruit and vegetables and low in saturated fat/trans-fat, sugar and salt), and physical activity (Ministry of Health, 2017a). In Nigeria, the National Multi-Sectoral Action Plan for the Prevention and Control of Non-Communicable Diseases (2019–2025) identified 'Unhealthy Diet' as a major modifiable behavioural risk factor for NCDs, other modifiable behaviour risk factors being tobacco use, physical inactivity and the harmful use of alcohol (Federal Republic of Nigeria, 2019b). It proposes concrete actions to promote healthy diets. In addition, the plan outlines a role for the Federal Ministry of Agriculture and Rural Development (FMARD) and the agricultural sector to promote food safety and nutrition through agricultural production and ensure quality control and standardisation for healthy options. The Zambian Strategic Plan 2013–2016 on Non-Communicable Diseases included objectives and interventions relevant for overweight and obesity focused on the promotion of appropriate nutrition practices; creation of awareness and empowering communities to adopt and sustain recommended nutrition practices; strengthening multi-sectoral collaboration; and mainstreaming and integrating nutrition programmes into other health programmes (Ministry of Health, 2012). The National Health and Strategic Plan (NHSP) 2017–2021 included reduction of under and overnutrition and improve clinical nutrition by 2021 (Ministry of Health, 2016b). In Indonesia, the Prevention

⁸ <https://www.who.int/europe/multi-media/item/9-global-targets-for-noncommunicable-diseases-for-2025>

and Control NCD Strategic plan and action plan (2015–2019) showed that NCDs accounted for 71% of deaths in 2014. Activities on overweight and obesity related to promotion of healthy behaviour, community-based interventions, such as strengthening the community health post for NCD prevention activities, and launching GERMAS, a healthy lifestyle movement under Presidential Instruction (Ministry of Health, 2016a).

In brief, in the policies on prevention and control of NCDs and health, strategies and action plans focused on the modifiable behavioural risk factors, such as improved nutrition, healthy diets, improved health and nutrition services and surveillance, with an emphasis on the cost-effectiveness of nutrition interventions in view of the manageability of NCDs.

4.3 Agriculture and Food Security

Agriculture and Food Security Policies and Strategies, generally fell under the jurisdiction of the ministries of agriculture, which worked with various other ministries, aimed primarily at achieving food and nutrition security for all population groups.

In Bolivia, a series of laws was adopted to ensure the implementation of actions guaranteeing the right to food, security and food sovereignty. These actions range from agricultural production at the community level, strengthening family farming to education and school feeding (Nogales, 2019, 2021). In Egypt, the Sustainable Agricultural Development Strategy (SADS) focused on production and food self-sufficiency, targeting wheat and maize production (MALR, 2009; Tellioglu & Panos, 2017). The agricultural policies are intertwined: Egypt's food subsidy system acts as a driver of interventions in the agricultural sector. It impacts production and cropping schemes, and price mechanisms (Kassim, Mahmoud, Kudri, & Breisinger, 2018). In Nigeria, the Agricultural Sector Food Security and Nutrition Strategy (2016–2025) defined improved food security and nutrition as the main goals of the agricultural transformation, which includes the prevention of overweight and obesity and promotion of healthy diets (Federal Republic of Nigeria, 2017). Priorities relating to nutrition and the reduction of overweight and obesity entail enhancing food value chains for improved nutrition, diversifying household food production and consumption, especially targeting women, increase access to micronutrient rich foods, nutrition education, social marketing, behaviour change communication and advocacy. Interventions also included school-based interventions that promote healthy diets and lifestyles and build household resilience, while boosting livelihoods and the local agricultural economy (e.g. school feeding linked to local agriculture and school gardening). In Zambia, the second National Agriculture Policy 2016 provided a framework for promoting sustainable agricultural diversification, agricultural commercialisation, private sector participation and inclusive agricultural growth (Ministry of Agriculture, 2016). The policy maintained a strong focus on food and nutrition security without specific reference to overweight and obesity. In Indonesia, the Food Law 2012 shaped Indonesia's current agricultural policy and a set of core objectives stipulating that the domestic food demand be fulfilled by imports if local food sources are insufficient (OECD, 2021). As in Egypt, agricultural policies are intertwined with food assistance and support schemes. Since 2019, the BPNT⁹, a social safety net programme, has been coordinated by the Ministry of Social Affairs (OECD, 2021).

In brief, agricultural and food security policies and strategies focused on strengthening sufficiency in staple food production, the promotion of nutrition sensitive value chains and dietary diversity in production and consumption, the promotion of bio-fortified food (production and consumption) and on food prices and affordability, including targeted food subsidies or food assistance schemes.

⁹ BPNT: Bantuan Pangan Non Tunai, Non-Cash Food Assistance Programme.

5 Interventions targeting overweight and obesity

This chapter addresses the research question on identifying food systems interventions that have the potential to prevent and/or reduce overweight and obesity. Intervention strategies in each of the countries were identified based on the document review and in the stakeholder consultation sessions. The findings were mapped against the HLPE food system framework for nutrition (Appendix 1) to create in-depth insights into ongoing interventions that target nutrition outcomes, including overweight and obesity. As described in the methodology, by combining document review and stakeholder consultations, we tried to paint as complete a picture as possible of the current situation relating to interventions on overweight and obesity. An overview of this is presented in Table 6.

5.1 Food supply chain interventions in production

Food supply chains play a vital role in food systems for delivering nutritious foods to consumers at affordable prices while simultaneously shaping food demand (Allen & De Brauw, 2018). It is according to this rationale that contributions from interventions in the food supply chain can be expected to contribute to addressing overweight and obesity alongside undernutrition and food insecurity. By nature, these interventions are not specific to overweight or obesity. Instead, they tap into the wider pool of interventions that make diets more healthy and nutritious. These interventions emerged as necessary strategies for creating non-obesogenic food supply chains. The main intervention strategies identified in the production subsystem relate to encouraging:

1. nutrition sensitive agriculture for improved dietary diversity,
2. household production, and
3. bio-fortified food production, aimed at filling nutrient gaps in countries.

Encouraging nutrition-sensitive agriculture for improved dietary diversity

- *Promotion of vegetable and fruit production, and livestock and fisheries production:* These intervention strategies aimed to diversify diets and move away from monotonous, carbohydrate-rich diets. This is partly caused by a focus on production of staples and, hence, overconsumption of starch. These strategies ranged from formally launched agricultural programmes by the Ministry of Agriculture relating to vegetable and fruit production (Bolivia, Indonesia) to more embedded strategies advocating or recommending interventions to promote nutrition-sensitive production at small holder and household level (Egypt, Nigeria, Zambia). In Zambia, for example, through the Scaling Up Nutrition (SUN) Movement, a particular focus was placed on further uptake of interventions based on improved livestock, fisheries, legumes and horticultural production to support household dietary diversity (National Food and Nutrition Commission, 2017).
- *Promotion of traditional food production:* These intervention strategies seemed most explicitly embraced in Bolivia, usually implemented by NGOs. They were aimed at promoting or increasing the production of traditional foods as part of 'modern' food baskets (e.g. quinoa) for the market and home consumption. In Nigeria and Zambia, supporting traditional crop production of small holder farmers' practices was more common.
- *Promotion of organic production (decreased use of agrochemicals):* These intervention strategies were most explicitly found in Bolivia and were usually implemented by NGOs. For example, there was the Bolivian 'Eat rich, Eat natural, Eat without chemicals' campaign in Cochabamba, which supports producers, farmers' markets and education activities, and it strengthens producer-consumer linkages.

Encouraging household production

- *Homestead gardening (kitchen gardens):* Various home and household-based intervention strategies were found in all countries, such as home gardening, collective gardening and collective kitchens in rural, urban and peri-urban areas. Generally, these interventions aim to support household food and nutrition security by enhancing availability of fresh food, dietary diversity, appropriate food handling and processing, and

healthy eating habits. These interventions usually include producing organic and/or local foods, fruit and vegetables, fish or aquaculture, raising small livestock or beekeeping.

Encouraging biofortified food production

- *Vitamin A (maize, cassava, sweet potato)*: The production of Vitamin A bio-fortified staple crops was a strategy adopted in Nigeria, Zambia, Egypt and Indonesia. In Indonesia, it was expanded to other staple foods (e.g. millet). Bio-fortification is considered an effective intervention strategy to reach large rural populations and can as such contribute to dietary diversity. In Indonesia, WFP is supporting this strategy with programmes to support implementation and to strengthen the evidence base of these strategies. (World Food Programme, 2020, 2021b).
- *Zinc, iron, other (wheat, rice)* – In Indonesia, the fortification of wheat (with iron, folic acid, Zinc, Vit B1 and B2) and rice (zinc) is mandatory (World Food Programme, 2021b). Through the Fill the nutrient Gap (FNG initiative), WFP actively supports the Indonesian government to implement and monitor these strategies. In Zambia, the SUN movement supports these types of interventions, i.e. the promotion of iron/zinc-rich beans production (SUN II, 2021).

5.2 Food supply chain interventions in storage, trade, processing, retail and marketing

The main intervention strategies relating to overweight and obesity identified in the transport, trade and processing subsystem focus on processing, retail and marketing components, addressing dietary quality. The main intervention strategies identified were to encourage:

1. regulations and food standards to reduce use of unhealthy ingredients in the processing stage (sugar/sweetener, sodium, trans fats, etc.),
2. increased market supply of fortified foods with adequate micronutrients,
3. food labelling (in local language) to create awareness about unhealthy ingredients, or
4. revision of food composition tables to include 'modern' processed foods, particularly for imported food.

Encouraging regulation and reviewing food standards

- *Regulations for reducing salt and sugar*: In some countries, namely Bolivia, these interventions were in their infancy, starting with exploratory studies to identify entry points for action. In Egypt, Nigeria and Zambia, more mature policy measures were in place to redirect the processing practices towards reduced use of sugar and salt, and to raise awareness on unhealthy nutrients and/or components. In Egypt, a project on salt reduction is ongoing with support from WHO. It aims to reach a 30% relative reduction in salt intake by 2025. Under the 100 Million Healthy lives initiative, specific health education initiatives are being implemented, involving salt reduction (Al-Jawaldeh et al., 2021; Ministry of Health, 2017; UN Egypt, 2019).
- *Sugar Taxation*: Taxes on sugar in soft drinks was found in Egypt, Nigeria, and Indonesia. The implementation of this strategy was generally supported by the WHO through the formation of national collaborations and coalitions to accompany price mechanisms with national campaigns to reduce sugar consumption (Federal Republic of Nigeria, 2019a; Kementerian PPN & Bappenas, 2021; UN Egypt, 2019).
- *Regulations for reducing trans-fats*: Egypt had an active policy of banning trans fats from locally produced or imported products. In Nigeria, intervention strategies to control the use of trans-fats by food producers were ongoing, supported by a coalition of actors including the Ministry of Health, the National Food and Drugs Administration and Control (NAFDAC) and Small and Medium Size Enterprises (SMEs) manufacturers (Federal Republic of Nigeria, 2019b; Sedky, Gaber, Magdy, & El Safoury, 2021).

Encouraging fortification

- *Iron (bread)*: Iron fortification in bread was practiced in Egypt from 2000–2014 targeting the general public. This was reviewed since and replaced by interventions providing fortified biscuits, aiming to decrease anaemia and micronutrient deficiencies in primary school children through government driven national school feeding campaigns (National Nutrition Institute, 2021; UN Egypt, 2019).
- *Iodine (salt)*: A national programme for universal salt iodisation (USI) for the prevention of iodine deficiency was found in Egypt (Al-Jawaldeh et al., 2021; Ministry of Health, 2017a; UN Egypt, 2019).

- *Vitamin A*: The fortification of palm oil was found in Indonesia as a mandatory intervention (WCRF, 2022; World Food Programme, 2021b).

Encouraging provision or reviewing food labelling

- *Food or nutrition facts labelling*: This intervention is mandatory in Egypt and Indonesia. In Egypt, the Nutritional Facts Labels are provided by the National Food Safety Authority, intended to better inform consumers so they can make food choices based on science-based facts about the nutritional ingredients (Sedky, 2021; National Nutrition institute, 2021a). In Indonesia, producers and retailers are required to provide a list of the nutrient content of pre-packaged food products and not make any nutrition or health claims. The Control of Claims on Processed Food Labelling and Advertisements establishes rules on the use of specified nutrient content claims (levels of fat for a low-fat claim) and sets out certain exceptions (WCRF, 2022). In Nigeria and Zambia, food labelling is not mandatory. In Nigeria, a nutrient profiling system has been developed to guide food labelling, nutrition and health claims, marketing, and standards for food processing, supported by Choices International Foundation¹⁰. The Nigerian Heart Foundation developed the voluntary *Heart Check Nutrition Labelling Programme* in collaboration with the National Agency for Food and Drug Administration and Control (NAFDAC). It grants permission to use the Heart Check logo on packaged food following a joint approval by NAFDAC and Nigerian Heart Foundation. The logo has been in use since 2005 (WCRF, 2022). In Zambia, food labelling is regulated through the *Good Food Logo* certification system, that ensures food products conform to nutrition standards and include messages to prevent overweight/obesity and NCDs. This initiative is supported by WFP. It aims to increase the private sector's engagement in nutrition in collaboration with the Zambia Bureau of Standards and the National Food and Nutrition Commission (WFP, 2019).

Update Food Composition Tables

- *Inclusion of 'new', processed foods* in food composition tables: Updated food composition tables were identified in Egypt, building on updated analyses to include 'new' or not previously analysed nutrients and adjusted for fatty acid analysis, covering 141 food items arranged in 16 food groups (National Nutrition Institute, 2021b).

5.3 Food environment

'Food environment' refers to the physical, economic, socio-cultural and policy conditions that shape access, affordability, safety and food preferences (HLPE, 2020). The main intervention strategies mentioned in relation to overweight were to encourage:

1. food availability and access to food for selected groups,
2. provision of information and guidelines, and
3. conducive policy conditions.

Encouraging food availability and access to food for selected groups

- *Food subsidies*: Food subsidy programmes were identified in Egypt and Indonesia as social safety nets to ensure food security. The Egyptian food subsidy programme targets low-income households and provides staple foods at subsidised prices to most of the population. They are recognised for their contribution to the high prevalence of overweight and obesity in Egypt (Abay, 2020). Debates are ongoing about these strategies should be rebooted in the dialogue on Egypt's Draft National Nutrition and Food Strategy. In Indonesia, the social protection schemes included direct food assistance, conditional and unconditional cash transfer programmes (World Food Programme, 2021b; OECD 2021).
- *School feeding programmes*: School feeding programmes were common in all countries. In Bolivia, the World Diabetes Foundation Prevention explicitly targets obesity in school children (*Programa de salud escolar de la ciudad de Cochabamba*). In Egypt, the United Nations complemented the National School Feeding Programme by providing nutritious in-school snacks to over 2 million school children aged 6–15 in community and public schools. In alignment with the national safety net Takaful, families of school children receive cash-based transfers or in-kind food assistance conditional on their children's regular school attendance (UN Egypt, 2019). In Nigeria, government driven school feeding takes place in primary schools,

¹⁰ <https://www.choicesprogramme.org/>

combined with school-based food production to enhance nutrition knowledge and dietary practices. In Indonesia, the national school feeding programme (PROGRAS) is not mandatory and has low coverage. Its aims to provide for healthier diets and nutrition education with a view to reduce overweight and obesity (Sekiyama et al., 2018)

- *School Gardening*: In Nigeria, the school gardening programme was identified. Combined with school feeding, it encourages pupils to farm at school and learn about the different food groups and dietary diversity.

Encouraging provision of information, guidelines and the implementation of referral schemes

- *School environments*: Bolivia has a nationwide Nutritional Food Education programme for schools, providing a curriculum for teachers and school materials for children, supported by the World Diabetes Foundation (*Programa de salud escolar de la ciudad de Cochabamba*). In Egypt, several school-based interventions address improved diets, overweight and obesity. The 'Children's Nutrition is Our Responsibility' project is a nutrition education campaign targeting teachers and parents of school children in 25 governorates in Egypt, which is supported by the National Nutrition Institute, the General Organization of Health Insurance and Ministry of Education, and WFP.
- *Food-Based Dietary Guidelines*: In all countries except Egypt, Food-Based Dietary Guidelines (FBDGs) were identified, which targeted the general public and specific target groups, such as school-aged children, pregnant and breastfeeding women, and the elderly. The presentation of these guidelines differs per country, but they all use a food group-based format to inform the public on balanced diets. In some cases, rounds of revision have taken place, e.g. in Nigeria where the first food based dietary guidelines date back to 2001 (WCRF, 2022). The most recent versions, like the Zambian and Indonesian FBDGs, were developed to build on consultations in the countries and on scientifically proven recommendations on diet and healthy lifestyles, including recommendations for physical activity and for addressing overweight and obesity to prevent and reduce the risk of NCDs (Ministry of Agriculture, 2021; WCRF, 2022; World Health Organization, 2017; Zambia Statistics Agency, Ministry of Health (MOH), & ICF, 2019).
- *School-based referral schemes*: In Egypt, the National Nutrition Institute supports surveillance and nutrition management protocols for school children with anaemia, stunting, overweight and obesity, and the testing of interventions to smoothen school-to-clinic referral (National Nutrition Institute & WFP, 2021; WFP, 2018).

Encouraging conducive policy conditions

- *Multisectoral policy and action*: In all countries, evidence was found on multisectoral collaborative structures that supported the development of national policy planning on food and nutrition security. Egypt has various multi-sectoral committees that support the development of guidelines and protocols on childhood obesity management. The National Nutrition institute is a key actor (Ministry of Health, 2017a; UN Egypt, 2019). In Nigeria, the Federal Ministry of Budget and National Planning coordinates all policies and strategies on nutrition and NCDs. The focus is on active, healthy lifestyles. However, there are no specific interventions addressing overweight and obesity yet (Federal Republic of Nigeria, 2019b, 2021). In Zambia, the National Food and Nutrition Commission launched the Zambian Information Platform on Food and Nutrition (ZIPN). ZIPN is a planned platform aimed at collating and analysing existing information and data from various sectors to support the development of evidence-based policy briefs and facilitate multisectoral and multistakeholder dialogue on nutrition at all levels (National Food and Nutrition Commission, 2017).
- *Advocacy*: The Zambia Nutrition Advocacy Plan (2017–2019) was developed to spread messages about healthy diets and to counter false and misleading information. The plan builds on social and behaviour change communication (SBCC) and advocacy to increase resources and political and social commitment, collective action, and ownership (N. Ministry of Health, USAID/FANTA, & FHI360, 2016).

Table 6 Overview of identified interventions*.

Food system area	Intervention strategies		Country				
			Bolivia	Egypt	Nigeria	Zambia	Indonesia
Food Supply Chain: Production	Nutrition sensitive agriculture for improved dietary diversity	Promotion of vegetable and fruit production	Green		Green		
		Promotion of (Small) livestock and Fisheries				Blue	
		Promotion of traditional food production	Green			Blue	
		Organic production	Blue				
	Household production	Homestead gardening, bee keeping	Green		Green	Blue	
	Biofortified food production	Vit A (maize, cassava, sweet potato)			Green		
		Iron (beans)				Green	Blue
		Zinc (rice)				Green	Blue
	Food Supply Chain: Storage & trade Packaging & processing Retail & Marketing	Setting/reviewing Food standards	Regulations for reducing salt and sugar	Green	Blue		
Regulations for reducing fat, especially trans-fats				Green			
Regulations of food safety (in processing, transport, storage)				Green		Green	
							Blue
Fortification		Iron (bread), Vitamin A (oil)		Green			Blue
Taxation		Sugar (especially soft drinks)		Green			
Setting/reviewing food labelling		Inclusion 'new', processed foods, focus local language		Blue	Green		Blue
						Blue	Blue
Update Food Composition Tables		Inclusion 'new', processed foods		Blue			
		Good Logo Campaign				Blue	
Food environment	Availability	Food subsidies		Blue			Blue
	Affordability	School feeding programmes	Blue	Green			Blue
	Acceptability			Blue			
		School Gardening			Green		
	Information & guidelines	School environments	Green			Green	
		Food-Based Dietary Guidelines	Blue			Blue	Blue
	Policy conditions			Green		Blue	
Consumer health & behaviour	Choice where & what food to acquire	General public	Green		Green		Blue
			Green	Blue	Green		
		Workplace		Green			
		Private sector		Blue			
		Households	Green		Green		
		Community based		Blue			Blue
	Food handling			Green			
	Awareness of impact of choices		Green		Green		Blue

*Green: Stakeholder consultations; Blue: Documents & stakeholder consultations.

5.4 Consumer behaviour

Consumer behaviour deals with “the entire process from acquisition to consumption of food as reflective of all the choices and decisions made by consumers, at the individual, household or collective levels, on what food to acquire, store, prepare, cook and eat – and how to dispose the waste – and on the allocation of food within the household (including gender repartition and feeding of children)” (HLPE, 2017). The identified consumer behaviour intervention strategies in view of overweight and obesity issues were largely general in terms of healthy diets and dietary practices. They did not directly targeting overweight and obesity. They relate to:

1. Encouraging raised awareness about what food to acquire and where,
2. Encouraging good dietary practices in food handling, and
3. Raising awareness of impact of food and lifestyle choices.

Encouraging raised awareness about what food to acquire and where

- *Campaigns and strategies for the general public:* All countries provided examples of broad, public-oriented campaigns in view of overweight and obesity issues. In Bolivia, media campaigns are in place advocating reducing the consumption of ultra-processed foods. Under the slogan ‘*Eat rich, Eat natural, Eat without chemicals*’, the consumption of more traditional and organic food is promoted. In Egypt, nationwide programmes have been implemented for raising public awareness, and tracking and monitoring the state of general health, promoting physical fitness and wellbeing. In doing so, the government depends heavily on advertisements in the media for communicating with the citizens and encouraging their participation in national initiatives (Abay et al., 2020; Aboulghate et al., 2021; Alebshehy, 2016; Samy, Khairy, Hammouda, Matter, & Hassan, 2012; Shahin, 2015; UN Egypt, 2019). In Nigeria, efforts to promote vegetable consumption were flagged. In Zambia, a government-driven *Healthy diet* campaign, supported by WFP, has been put into place as part of a social protection scheme. This campaign is geared towards raising awareness on the multiple dimensions of malnutrition in rural areas to promote food security and nutrition. In Indonesia, the *Healthy Community Movement* is in place, known as *GERMAS*. *GERMAS* was outlined in the Presidential Instruction Number 1 (2017) and implemented under the Ministry of Health to accelerate and harmonise the promotive and preventive efforts related to healthy living. *GERMAS* supports nationwide education on balanced nutrition and reducing overweight and obesity and provides guidelines for the Archipelago Movement to Reduce Obesity Rates (AMROR or known as *GENTAS* in Indonesia) (Dewi, Tazhiha, Solechah, & Bohari, 2021; Gani, 2019; Kementerian PPN & Bappenas, 2021; Ministry of Health, 2017b).
- *Community and household based interventions:* Community and household based interventions in Bolivia related to women’s centres implementing nutrition and gender related activities. In Egypt, the ‘Nutrition Kitchen’ was found. This is a nutrition education programme targeting mothers of malnourished children (a small scale, costly intervention suffering from implementation constraints). Public awareness initiatives on obesity and educational programmes by non-profit or civil society organisations were also discovered, generally using a wider focus on health education, but which do sometimes include physical activity (Shahin, 2015).
- *Food consumption surveys:* Regular monitoring of food consumption, food intake and nutritional status was not well established in any of the countries. Generally, little information was available on nutrient intake and adequacy regarding special population groups. However, there were occasional exceptions for pregnant and lactating women, and children under five years of age. A few initiatives were identified, such as the Egypt food consumption pattern survey 2021, a population-based survey on the types and amounts of food consumed by people aiming to contribute to developing a database to identify, predict and detect chronic or acute food and nutritional problems, and to describe food habits and nutritional status (National Nutrition Institute, (NNI) 2021c). In Indonesia, the WFP’s initiative ‘*Fill the Nutrition Gap*’ was identified, supporting the analytical competencies and quality of analyses to identify barriers linked to affordability, accessibility and consumption of healthy diets. Its aim was to link up to surveillance of the population nutritional status and to assess the impact of ongoing efforts to improve nutrient intake and good health (World Food Programme, 2020, 2021a).
- *Workplace driven interventions:* Examples of interventions on overweight and obesity in the workplace were found in Egypt. Various government actors and NGOs requested NNI provided advice and guidelines for creating a healthy menu for their employees. Few organisations have programmes for employees to improve health and wellbeing. Few food producing organisations work on programmes in partnership with

local organisations to promote healthy eating and physical activities as part of their corporate social responsibility (Shahin, 2015).

- *Private sector driven initiatives:* Examples of interventions from the private sector were found in Egypt. They related to the development and implementation of business ideas for healthy food catering, applying general fitness programmes and certifying fitness trainers. This was considered a growing business in the field of catering and healthy food (Shahin, 2015).

Encouraging good dietary practices in food handling

- *Guidance on food preparation on dietary moderation:* These interventions related to raising awareness and messaging about dietary moderation. They concerned the use of added sugar, salt, fat and oil in food preparation. These interventions generally built on or used national dietary guidelines. In Nigeria, it was flagged that changing cooking practices in this direction often accompanies a risk of discouraging traditional cooking methods with possible negative consequences for food cultures.

Raise awareness of impact of food and lifestyle choices

- *Healthy, active lifestyle:* These interventions were found in Egypt. They included national weight loss programmes through sports and physical activity promotion, under the slogan '*Alreyada lel Gami*' (Sports for Everyone). Under the same slogan, additional interventions and programmes targeting obesity focused on promoting physical activity and obesity management. These programmes were carried out as physical activity programmes and run by organisations under the control of the Ministry of Youth and Sports (Shahin, 2015).

6 Enablers and barriers for overweight and obesity interventions

This chapter addresses the research question about the existing good practices and constraints to intervention strategies for overweight and obesity. It describes a synthesis of enablers and barriers that relate to intervention strategies on overweight and obesity. It does so based on a document review and stakeholder consultations, and how this relates to the role of the food and agriculture sector in driving healthy food habits and lifestyles. An overview of enablers and barriers by country can be found in Appendix 5.

6.1 Enabling factors

International dialogue can play an important enabling role. In all countries, the convening power of the national UNFSS dialogues¹¹ in 2021 were flagged as a huge boost to pursue better dietary outcomes for all people through food system transformation. The 2021 Nutrition for Growth (N4G) Summit¹² was also mentioned, as were COP26 and COP27. These are particularly relevant for Egypt as they were organised there. These international fora generate national interest at a range of levels, thus creating the opportunity for dialogue.

Multisectoral policy frameworks guided by clear **political leadership**, such as the presidential initiatives in Egypt and Indonesia, provide the implementing policy departments and organisations with a clear mandate to act on healthy active lifestyles. This overarching topic includes healthy diets, overweight and obesity. As described in Chapter 4, all countries seem to have their multisectoral policy frameworks and legal arrangements in place to address food and nutrition security, generally in close alignment with international (i.e. UN) frameworks. In most cases, a national institute or coordinating body has been established to ensure progress in cooperation and coordination, and it is affiliated with the ministry of Health or Food. The results of these collaborative ventures contribute to national policies and plans of action.

In all countries, **existing multistakeholder collaboration** on nutrition with UN organisations (WFP, WHO, FAO, UNICEF) is well-established and plays a key role. It is consistently supported by active SUN networks in some countries. Implementation is assisted by national and international NGOs. Existing collaborations and platforms, such as the SUN, are considered strong enablers that drive collaborative action, partnerships and multi-sectorial programmes on a mass scale. This includes national campaigns to get nutritional issues recognised and put on the national agenda, including overweight and obesity. Overweight and obesity as part of the nutrition challenge are most explicitly embraced in Bolivia, Egypt and Indonesia. The collaborative arrangements mentioned above also serve the need to join forces to generate the required resources and tangible assets such as facilities, finances, and staff in order to enable the defined implementation strategies.

In all countries, **upcoming trends and growing awareness** is observed for healthy food and physical activity, maybe partly due to the Covid restrictions over the past years keeping many people home bound. In combination with current campaigns on healthy diets and active lifestyles, this is seen as a good leverage point to generate awareness interest in overweight and obesity management more explicitly. However, this trend is more mentioned in relation to urban areas than rural areas.

Information and data availability

The importance of generating information and routine data collection was flagged as a need to adequately address overweight and obesity. The efforts in the countries to strengthen nutrition surveillance systems and include monitoring of overweight and obesity and expand the target groups for monitoring emerged as positive developments. An interest was expressed in investing more in interventions studies that assess the impact of intervention strategies.

¹¹ <https://summitdialogues.org/overview/member-state-food-systems-summit-dialogues/convenors/>

¹² <https://nutritionforgrowth.org/>

6.2 Barriers

Despite the fact that all countries seem to have established multisectoral policy frameworks for improved nutrition, a **lack of policy coherence** was observed, particularly in relation to the combat of NCDs. In some countries, a lack of policies and strategic plan of action was observed for physical inactivity, unhealthy diets, and other harmful health behaviours (e.g. alcohol intake, smoking). In addition, regulatory frameworks and legislation to make the food system more 'friendly' in terms of healthy diets need strengthening. There are conflicts of interest between policies, such as mandatory policies on food labelling conflicting with policies on trade and industry at the ministerial level; economic and business interests usually prevail (Dewi et al., 2021). Interventions to address obesity and overweight also often take time to yield measurable results, which disincentivises political commitment.

In addition, the **multistakeholder platforms** and collaborations flagged as an enabling factor **often face hurdles**. Groups, NGOs and platforms do not easily collaborate with government institutions. There is a lack of involvement of private sector actors, either from the food or private medical sector. These sectors are needed as important partners in obesity management. A conducive environment and strategy, either formalised by government or not, is also generally lacking. This results in fragmented, usually short-term projects working in isolation.

Lack of donor interest was also flagged as a potential barrier. This study reveals a general lack of recognition of overweight and obesity as a problem beyond it being framed as a modifiable behaviour factor in the prevention and control of NCDs. At country level, the international nutrition frameworks provide guidance to national strategies, however, the international donor community is slow to embrace the triple burden of malnutrition in their strategies. Even in countries where prevalence of overweight and obesity is alarmingly high, the food and nutrition security agenda is predominantly defined by a strong focus on undernutrition, ignoring the intra-household triple burden concerns.

The food sector, being a huge business everywhere, can act as **a countervailing force of the food industry** having the means and resources to advocate for and market processed products to the detriment of healthy foods. Private entities and the food industry at large failing to comply with policy and guidelines that aim to target obesity is a major concern, including the advertising of non-healthy foods. Although policies and regulatory frameworks are in place for controlling food products, processing and labelling, there is concern and frustration relating to the violation of these policies or inconsistencies in the policy landscape. Private sector parties selling foods without caring about the frameworks, or other statutory instruments permitting them to do so is also a worry. Concern was flagged in all countries – both in documents as well as in stakeholder consultations – around violations in food labelling, using deceptive language and making unsubstantiated health claims. This, combined with a lack of effort to create public awareness on food composition and labelling with a particular focus on processed foods, requires rethinking and revisiting the compliance arrangements between governments, private entities and the food industry with regards to policy and guidelines that aim to target overweight and obesity. Strict monitoring needs to be enforced so the entire food industry complies with policy (Dewi et al., 2021; Shahin, 2015) (Herbst 2020).

The food industry and other food suppliers are highly responsive to consumer demands, monitoring and contributing to new **trends in the food supply and food suppliers' behaviour**. As a result of the COVID-19 pandemic, mobile food delivery (both prepared and single food items) has become a standard practice in most countries, particularly in urban areas. There has also been an increase in fast-food outlets. The prices of snacks and processed foods are kept low for both urban and rural dwellers, whereas the pricing of fresh food is high, more volatile and currently going up rapidly in response to the developments in the world, which are destabilising the food and energy markets.

Changing lifestyles due to urbanisation, technology and the more recent home-bound habits resulting from the COVID-19 emerged as critical barriers towards addressing overweight and obesity. These developments encourage sedentary lifestyles and the consumption of ultra-processed foods without providing opportunities to maintain or adopt a healthy lifestyle. 'Obesogenic' food environments are on the rise in all countries, the so-called 'food court' facilitating easy access to processed foods. This, in combination with a lack of nutrition education, aggravates the consequences of these lifestyle changes in urban and rural areas. Gender

differences in most countries further exacerbate this, women and girls have less access to physical activity facilities or face other types of barriers (Abay et al., 2020; Alebshehy, 2016; Rachmi, Li, & Baur, 2017; Roemling & Qaim, 2012; Sedky et al., 2021; Shahin, 2015; World Food Programme, 2017).

Lack and poor use of information and data is an overall issue of concern. The documentation on overweight and obesity interventions is poor. Information sources hardly offer any clarity on the theories of change used, the implementation strategies applied or transparency on monitoring and evaluation. Moreover, there is an absence of comprehensive data. Data are mainly available for women and children (under five or school aged) but not for other groups, such as men, youths, adolescents, PWDs or the elderly. There is a particular lack of gender and rural-urban disaggregated information. The lack of data availability and accessibility for impact assessment is a particular issue. It results in a lack of evidence on proven interventions. Programmes and policies targeting overweight and obesity are relatively new and coverage is low, and the monitoring and evaluation are generally poor. This means there is limited evidence of the impact of interventions. In addition, the uptake of up-to-date evidence for policy and service delivery decision making is poor which affects effective strategizing for overweight and obesity prevention and control. Lastly, there seems to be a blind spot for the interrelated nature of overweight and obesity, and stunting, wasting, anaemia and micronutrient deficiencies. There is a need to strengthen and develop research agenda to generate more data and better understanding.

In addition, most intervention approaches combating overweight and obesity are mainly framed to prevent and control NCDs, and they are less often focused on promoting healthy and active lives. This might explain the **lack of attention for creating an enabling environment for healthy active lifestyles**. These environmental factors could include physical activity facilities and infrastructure, shops with healthy foods in vicinity, or improved access to and availability of healthy food options, supported by media messages to communicate simple and clear messages about good nutrition, and focusing more on health education. Although overweight and obesity ultimately result from an imbalance in energy expenditure and energy intake, research has shown that calculating the dynamics of energy imbalance to predict changes in body weight are not straightforward. Accordingly, interventions cannot simply target altering one factor contributing to obesity; they need to be multi-faceted and include physical and social environmental aspects in order to succeed (Shahin, 2015).

Cultural beliefs, customs and habitual behaviours and misconceptions about body and health are flagged as important barriers, e.g. fat babies considered to be healthy babies and therefore fed junk food, or thinness associated with HIV/AIDS and poverty. Generally, a lack of healthy and active lifestyle 'literacy' was flagged, indicating lack of personal skills and motivation, requiring education social behavioural change strategies. Furthermore, in-country diversity in cultural beliefs and habits may hamper large-scale implementation of national FNS guidelines, campaigns or Social Behaviour Change Communication (SBCC) strategies as they need tailoring to different geographical areas and the communication media used.

The **implementation of interventions is scattered and skewed to urban areas**. Efforts to prevent overweight and obesity are few and scattered. Spatially, in terms of country coverage, urban areas are mostly targeted. Interventions generally target youth and women. Many interventions have a relatively short time span, and suffer from a lack of continuity and low quality of services. Consequently, the collective impact of such intervention strategies on controlling overweight and obesity can only be limited.

A general **lack of resources and/or inadequate funding** was flagged for implementation of both nutrition strategies and NCD control and prevention, coming from domestic as well as international sources was flagged, also affecting intervention strategies for overweight and obesity. In some countries, it is hard to address undernutrition adequately although it is much needed. This may cause governments to hesitate in also investing in addressing overweight or obesity. In addition, most nutrition interventions are delivered through or in collaboration with health system actors. Strengthening this system is fundamental to the success of any nutrition scale-up plan, including activities addressing overweight and obesity. Resources, such as human capital and infrastructure, are needed to develop and implement interventions at scale.

7 Advancing the agenda on overweight and obesity in agriculture and rural development

This chapter describes the findings of a stakeholder mapping done during the stakeholder consultations. Participants provided suggestions that have or could have had a role in addressing overweight and obesity, especially with a view to nutrition-sensitive interventions that were related to overweight and obesity for IFAD target groups (RQ3). This information was cross referenced and complemented with information from the document review. The details of the stakeholder mapping across the five countries are presented in Appendix 6.

7.1 Stakeholders concerned with overweight and obesity

Government

With reference to Chapter 4, governmental stakeholders working on overweight and obesity were at the intersection of policies and interventions on food and nutrition, prevention and control of NCDs and agriculture, and food security. Many ministries, departments and national institutions are or need to be engaged in multisectoral partnerships to ensure adequate multisectoral policy development and national strategies for implementation to:

1. establish or revise legislation and regulatory mechanisms,
2. support nutritional and health education (campaigns, SBCC, curriculum development), and
3. enable research to create the evidence-base on effectiveness of interventions, and the dissemination of accurate information on overweight and obesity.

In all countries, the ministries of health were the ministries with direct responsibility for overweight and obesity. Being responsible for health policies gives them full mandate to develop or engage in intervention strategies that address overweight and obesity. They have a role in NCD management (prevention and control), including in surveillance, capacity building of health staff (nutritionists and dieticians). They also implement and create evidence bases for health and nutrition promotion interventions at multiple levels. Moreover, ministries of health also have jurisdiction over the provision of evidence-informed food standards and food composition tables. The ministries of health have the infrastructure needed to reach out to community level. To take up overweight and obesity tasks, however, the health infrastructure would need strengthening. It would also require support from health and social services to implement the health and nutrition promotion interventions. In terms of connectivity, the ministries of health have the most extensive network, through different layers of society and with a wide range of sectors and actors. It has the potential to reach out to the capillaries of society. The ministries of health either contained or were aligned with key institutions on nutrition, providing research and implementing power. In addition, they are generally well-aligned with a wide range of other line ministries active in agriculture, education, social affairs, youth & sports, community development, commerce, industry and trade.

The nutrition institutes or councils were also identified as key stakeholders. They generally reside under ministries of health, and they collaborate closely with other key stakeholders. Together, they are responsible for translating policy into national implementation strategies across different ministries and ensure feasibility of interventions. They are engaged in:

1. nutrition related research on all types of malnutrition (determinants of the triple burden, food consumption, impact assessment of interventions),
2. capacity building of frontline workers, clinics, and policy-level staff on overweight and obesity,
3. strengthening screening practices, and
4. developing guidelines/protocols for management of nutritional diseases.

The ministries of agriculture were the third key stakeholder identified in the landscape on overweight and obesity, being responsible for the policies relating to the agricultural sector and food and nutrition security strategies. The Ministry of Agriculture supports nutrition-sensitive agriculture and advocates for food-based dietary approaches, diversification of household food production and promotion of production and consumption of micronutrient-rich foods. In some countries it plays a key role in formulation and implementation of food-based dietary guidelines. Overweight and obesity, however, is generally not clearly on its radar. A more explicit shift of focus is needed, from undernutrition to integrated approaches for addressing the triple burden of malnutrition. In terms of connectivity, the network of the Ministry of Agriculture is very much shaped along the food value chain actors from farmers and their households to consumers, including the aligned ministries (especially food, health, commerce, industry, trade, finance and planning, food industry, manufactures, vendors, etc.).

Other relevant line ministries identified were those with mandates relating to segments in the society, such as education, youth, women's affairs, rural development, community development, social affairs. These ministries could play a key role in developing and delivering target group specific strategies and supporting empowerment and inclusion. In addition, the ministries dealing with food, industry and trade were identified as relevant being responsible for policies and strategies relating to food as a commodity. Ministries of finance and budget planning generally play an important role in the coordination of multi-sectoral efforts in food and nutrition and in ensuring that sectoral plans align with the national policies on food and nutrition.

Other relevant government actors identified were regulatory bodies (e.g. consumer protection agencies, agencies for food safety and food standards) that were responsible for regulatory frameworks for food industry and businesses and their compliance.

International organisations and donors

The stakeholder mapping identified a need to strengthen partnerships with international stakeholders in the field of nutrition and health. This kind of collaboration between IFAD and WHO, for example, on the National NCD prevention strategy, WFP on school feeding and FAO on nutrition sensitive agriculture could provide the consultancy services, technical support, and finance necessary for optimising the effectiveness of obesity prevention programmes. In terms of connectivity, the UN agencies and international NGOs play a key role in bringing stakeholders together and support network formation and governance.

Academic/research institutes

Collaboration with academia and research institutes was found in all countries to identify and address knowledge gaps. The development and implementation of a relevant research agenda on the triple burden of malnutrition and physical activity research institutions can i) contribute to the development of an evidence base for effective interventions, ii) develop and standardise research instruments, adequate curricula for training and education of students on overweight, obesity management and physical activity, and iii) support the dissemination of information (publications, conferences, webinars/seminars).

Civil society

Civil Society Organisations (CSOs) and faith-based organisations were identified as implementing partners at the community level, on behalf of or paid for by government or UN agencies. Their role can be to:

1. articulate projects to encourage nutrition sensitive production for small producers, women and indigenous populations;
2. contribute to or implement awareness raising campaigns about healthy diets;
3. provide affordable nutrition services; and
4. ensure community participation in interventions and programmes.

The SUN Civil Society Network or Alliance (SUN-CSA), as a network uniting a wide range of nutrition actors, was found active in several countries and has a strong convening power. SUN-CSA collaborates with government agencies, development partners and technical consultants in planning, implementation, monitoring and evaluation of programmes for improving nutrition. This offers potential for integrating overweight and obesity by creating awareness and support for nutrition programmes and interventions through high level advocacy targeting policy makers, development partners, industries, NGOs and the general public.

Private sector

The private sector was identified as important but hard to engage. Private sector actors, food industry as well as SMSEs are at the heart of the food system. Sensitising food manufacturers and processors was mentioned as a need to ensure:

1. responsible practices regarding marketing, advertisements, and health claims in relation to overweight and obesity, and
2. compliance with existing legislation and regulations for food processing (limiting use of unhealthy ingredients) and food labelling.

Similarly, food vendors/caterers would need sensitising on the provision of healthy food choices and support the creation of healthy food environments. The SUN Business Network, which is supported by WFP and active in a few countries, engages with private sector actors for improved nutrition. This network could play a role in the sensitisation of the private sector, which is needed to apply responsible practices regarding advertisements and health claims.

In brief, to advance the agenda on overweight and obesity in agriculture and rural development, targeted engagement of all food value chain actors, including governments, regulatory bodies, civil society and international organisations would be required to guarantee responsible practices for improved nutrition outcomes. For key ministries, such as agriculture, health and food, a shift in focus would be needed from undernutrition to integrated approaches addressing the triple burden of malnutrition. Likewise, regulatory bodies for food safety, food labelling, processing and preservation, and consumer interests generally resonate very little with the overweight and obesity concerns. They would need to shift focus explicitly to the triple burden of malnutrition, in connection with the behaviours of food suppliers. In addition, except for WHO and UNICEF, donors and international organisations including the UN agencies still largely ignore or pay limited attention to the concerns of overweight and obesity, preventing strategies for integrated approaches for triple burden of malnutrition to emerge and become mainstream. To bring about this shift towards embracing the triple burden of malnutrition, technical support and capacity strengthening is needed.

7.2 Strengthening overweight and obesity interventions in IFAD's country strategies and investment projects

IFAD's strategic framework states that "agricultural productivity growth alone is not sufficient to generate improved nutritional outcomes." Guided by its Action Plan on Mainstreaming Nutrition-Sensitive Agriculture, IFAD's country programmes and projects systematically promote the availability, accessibility, affordability and consumption of diverse, nutritious foods (including biofortified crops with higher nutrient value). To ensure the connection between increased incomes and production and better nutrition. IFAD's programmes also work to raise nutrition knowledge and education and seek to improve practices and behaviours that lead to year-round healthy diets for all household members, including those dealing with dietary diversity, food choices, food quality, storage, preservation and preparation (IFAD, 2016c).

In the spirit of the abovementioned framework, entry points for IFAD to include more explicitly overweight and obesity identified in this study relate to:

- Strengthening partnerships with a focus on food environments and consumption. IFAD's cross-cutting partnership priorities on scaling-up and partnership brokerage are relevant for shaping the nutrition agenda embracing the triple burden of nutrition;
- Embracing healthy diets in the realm of sustainability concerns;
- Closer engagement with the private sector, and
- Strengthening support to national nutrition monitoring and surveillance to update existing data and considering rethinking impact assessment of IFAD-supported projects on nutrition, including overweight and obesity.

Strengthening partnerships with a focus on food environment and consumption

IFAD recognises the importance and value of partnerships as a means to achieving its development objectives, defining partnerships as:

Collaborative relationships between institutional actors that combine their complementary strengths and resources and work together in a transparent, equitable and mutually beneficial way to achieve a common goal or undertake specific tasks. Partners share the risks, responsibilities, resources and benefits of that collaboration and learn from it through regular monitoring and review. (IFAD, 2012a)

Based on the findings of stakeholder mapping and given the type of actions in which IFAD wishes to engage with member states, IFAD could strengthen its role in addressing overweight and obesity by investing or strengthening partnerships relating to food production, food environment and consumption, and physical activity environment in the wider obesity systemic landscape (Butland et al., 2007). In doing so, IFAD would be well positioned to embrace and scale up the agenda on the triple burden of nutrition. Partnering with other nutrition initiatives (e.g. SUN and GAIN) could be explored and strengthen the brokerage of partnerships among other development actors to raise awareness, support policy analysis and agenda setting targeting the triple burden of malnutrition.

Food production

Well established partnerships with all line ministries and actors having a stake in the food production form the fabric of IFAD's operations in all countries. Strengthening these partnerships and programmes is needed to sensitise the food production sector to the triple burden of malnutrition, to support nutrition sensitive production practices for diversification of diets and better programming, policy analysis and agenda setting targeting the triple burden of malnutrition.

Food environment and consumption

IFAD could expand established partnerships with line ministries and actors by strengthening or joining partnerships liaised with the ministries of health and national nutrition institutes and the multisectoral partnerships in place around NCDs. This is already the case in most countries, but it is very important given the strong mandate of the ministries of health and the well-established collaborations in this domain, next to health systems having wide outreach to local levels. IFAD's particular strength on food-based and nutrition sensitive approaches, its investment agenda and its connections with food industry could be complementary to the nutrition and health strategies usually applied to address overweight and obesity. In addition, strengthening partnerships and programming is needed in established partnerships with the ministries of industry, commerce or trade, the regulatory agencies alongside the food industry, manufacturers and food vendors, to sensitise the food sector to accept responsibility for the triple burden of malnutrition.

Physical activity environment

IFAD could expand established partnerships by strengthening or joining partnerships that focus on creating conducive physical activity environments to address overweight and obesity. IFAD could support research and practice in exploring aspects of the physical environment that could be manipulated to increase population levels of physical activity. For example, greater accessibility to common destinations (e.g. parks, shops), new infrastructure for active travel (walking, cycling) and public transport, and a mix of land uses have all been shown to encourage higher levels of physical activity. This requires partnering with the ministries of health and reviewing existing partnerships with rural development actors. Overweight and obesity cannot be solved by behavioural measures alone. Collaborations are required with ministries for education, youth, sport, as well as spatial planning agencies to address the physical environment issues driving the development of obesogenic environments.

In brief, supporting the delivery of strong partnerships in the domain of food environment and consumption offers opportunities to embrace addressing malnutrition in all its forms more explicitly, including overweight and obesity. Promoting healthy diets and physical activity are two overarching strategies that are used to address NCDs. Some of the actions that underpin these strategies address overweight and obesity, other actions use other diet-related mechanisms to address NCD prevalence (e.g. reducing salt consumption, reducing trans-fat consumption). Seeking alignment with the action agendas on nutrition and NCDs could

compliment IFAD's efforts on food-based and nutrition sensitive approaches, its investment agenda, and its connections with food industry. This would be fully in line with IFAD's strategic objective to increase the productive capacity of poor rural people, and with the action plan on mainstreaming nutrition. The IFAD Partnering Toolkit may be useful to support the delivery of IFAD partnerships. It provides tools that pull together established good practices for partnering offering IFAD staff a set of guides, processes, tips, checklists and templates to be used in the day-to-day work of partnering (IFAD, 2021e).

Embrace healthy diets

The agricultural strategies relating to overweight and obesity promote nutrition sensitive agriculture and food system interventions. As such, IFAD embracing 'healthy diets' can serve as a linking pin between actions geared towards under and overnutrition while integrating the sustainability concerns around healthy diets (FAO and WHO, 2019). IFAD's strategic framework states the following:

For rural populations everywhere, the growth of urban areas can bring income opportunities linked to the development of new supply chains serving urban markets and create jobs, made accessible via migration or commuting. Many small family farms are seizing these opportunities to become vibrant enterprises catering to new dynamic markets. These small businesses are capitalising upon advantages of their size and the use of family labour, and combining these with scale efficiencies achieved through collective action. (IFAD, 2016c)

To support these opportunities, solid and targeted policy analyses, agenda setting and facilitating a conducive investment climate geared towards 'sustainable healthy diets' can serve to bridge between agricultural and health driven intervention strategies.

Close engagement with the private sector

IFAD's engagement with the private sector is a critical need emerging from this country mapping in various ways. The existing food related pricing, processing, marketing and advertisement practices are of great concern to many, oftentimes countervailing efforts to address overweight and obesity. Because of the position of influence they have, actors in the food industry seem to have free rein to the detriment of consumers. Strategies to counter malpractice in the food industry and encourage positive business initiatives to the benefit of healthy and active lifestyles are badly needed in all segments of society. Exploring the potential and the role of small and medium size enterprises to contribute to reducing obesogenic food environments, building on the adaptability of these food system actors shown during the COVID-19 pandemic.

Strengthen support to national nutrition monitoring and surveillance and consider rethinking impact assessment of IFAD-supported projects on nutrition

IFAD's engagement in improved nutrition surveillance strategies at national and local levels, and in intervention studies of overweight and obesity in the rural areas of LMICs could contribute substantially to improving analysis and reporting for strategic decision-making to address malnutrition in all its forms. More and better disaggregated data, and adequate indicators are needed to monitor the range of population groups of interest to IFAD moving beyond women and children to create a better understanding of dietary patterns and behaviours in relation to socio-economic conditions, like pricing and affordability, leading to year-round healthy diets for all household members.

8 Reflections and conclusions

This chapter presents the overall reflections on the findings relating to the observed intervention strategies on overweight and obesity based on the document review and stakeholder consultations, and how this relates to the role of agriculture sector in driving healthy food habits and lifestyles in rural areas. The chapter closes with a final conclusion.

8.1 Overall reflections relating to country mapping findings

Overall, the country mapping revealed that elevated levels of undernutrition among children under five, adolescents, and women of reproductive age are still highly prevalent in the five countries. This is also true in the countries where overweight and obesity are highly prevalent among children, youth and adults in both in urban and rural areas (Bolivia, Egypt, and Indonesia). The rise in overweight and obesity can be seen at early ages, but it increases with age and particularly affects female adults. In some countries, there was evidence that while prevalence usually was still lower in rural than in urban areas, the rise of overweight and obesity prevalence is faster in rural areas (e.g. in Egypt and Indonesia). Some general reflections relating the research questions are given below.

Drivers of overweight and obesity in rural areas

The main drivers of overweight and obesity are: food insecurity, urbanisation, dietary and lifestyle transition, socio-economic (income, education), gender, cultural factors, wealth status, obesogenic and poor dietary diversity, lack of physical activity, and poor maternal, foetal and infant nutrition. Although the main drivers appear the same, countries seem to differ in how much particular drivers matter. This is true between countries but within countries too. In addition, as many of these drivers are intertwined, a contextualised design, development and implementation of interventions is required to adequately address overweight and obesity. The study, however, flagged a lack of updated nutritional information at the national and local level. This does not support in-depth analysis and strategic decision-making to address malnutrition in all its forms.

Interventions related to overweight and obesity in the different areas of the food system

There is little evidence that the identified policies, interventions and programmes were effective in addressing overweight and obesity. The examples of existing programmatic interventions tackling overweight and obesity through agriculture and food systems transformation focused on food marketing and processing, such as food labelling, aimed at raising awareness on nutrient content of foods. However, investing in improved information on food may have limitations regarding the low educational levels and levels and lack of health literacy as drivers of overweight and obesity, the effectiveness of these strategies remains to be seen. The document review also revealed that, generally, overweight and obesity were not distinguished between in terms of problem definitions or intervention strategies. Interventions addressing overweight and obesity often lack a theory of change specifying pathway(s) that link access to healthy foods and overnutrition. Building an evidence base of what works in interventions and strategies addressing overweight and obesity is therefore critical need, alongside embedded strategies for monitoring, evaluation and learning.

Nutrition sensitive interventions related to overweight and obesity for IFAD target groups

The nutrition-sensitive strategies pursued by the agricultural sector do not always specify whether they aim to address undernutrition, overnutrition or both. The study revealed that it is not simple to find comprehensive or consistent data on overweight and obesity in the rural areas across different age groups and different population groups. Data on IFAD's specific target groups like youth, disabled, or indigenous population groups were rare. Our findings, however, may be limited by language issues, particularly in the case of Indonesia where a lot of government documents and publications were only available in Bahasa.

Enablers and barriers to intervention strategies for overweight and obesity

Enablers and barriers often represent poles of the same scale. Enabling factors, such as the convening power of international dialogue and political leadership support agenda-setting, existing policy, institutional arrangements and established multistakeholder arrangements. They also support the access and availability of information, data and tangible assets. If any of these things are absent, they can be serious constraints. The countervailing force of food industry not complying to regulatory frameworks favouring healthy diets was flagged as a major constraint as they influence trends in food supply and food suppliers' behaviour, and trends in consumer behaviour. Lack and poor use of information and data was identified as a constraint, which was aggravated by the fact that interventions addressing overweight and obesity are scattered and skewed to urban areas. Lastly, existing cultural beliefs and habits, especially relating to physical appearance and physical activity, were mentioned to seriously hamper the effectiveness of interventions.

8.2 Conclusions

Our findings underline that the prevalence of overweight and obesity is not consistently and systematically monitored. Data sources tend to be outdated, and there is little solid data on prevalence of overweight and obesity in rural areas. Little is known about existing programmatic interventions tackling overweight and obesity through agriculture and food systems transformation and the effectiveness of the strategies being employed. There is a gap in the evidence on what works and what not. The prevalence of overweight and obesity is not consistently or systematically monitored in LMICs. Monitoring and evaluation play a key role in filling the knowledge gaps, but more data is needed to map distinct population groups (beyond women and children) to create a better understanding of dietary patterns in relation to socio-economic conditions, like pricing and affordability. In addition, the food and nutrition security agendas at country levels were still focused largely on undernutrition and micronutrient deficiencies. This does not reflect an actionable agenda on the triple burden of malnutrition. Moreover, in line with conclusions of Abay et al. (2020), the country mapping revealed that overweight and obesity rising in rural areas is not recognised as a unique pattern yet. This is probably because it goes against the mutual understanding of viewing urbanisation as a major driver of changing consumption patterns and lifestyles associated with the rise in Body Mass Index (BMI) and overweight and obesity rates worldwide. This makes it an area calling for a clear research agenda and further exploration.



Part II – Country Case Profiles

9 The Plurinational state of Bolivia

9.1 Overweight and obesity

Bolivia has made significant progress in reducing chronic malnutrition in children under five years of age. According to the 2016 National Demographic and Health Survey, chronic malnutrition in children under five years of age has significantly decreased from 31% in 2008 to 17% in 2016 (Instituto Nacional de Estadística & Salud, 2017) and further decreased to 12.6% in 2021 (FAO, IFAD, PAHO, UNICEF, & WFP, 2021). Concomitantly, there is an increase in the prevalence of overweight/obesity. Total prevalence of overweight and obesity in children under five years of age exceeds 10%, a figure above the Latin American average of 7.6% for 2012 (Instituto Nacional de Estadística & Salud, 2017; Pan American Health Organization, 2015). In 2012, a prevalence of overweight/obesity of 25% was recorded in adolescents aged 15–19 years (Bolivian Global School Student Health Survey (GSHS)) (World Health Organization, 2012). More recent figures indicate that among school-aged children and students, three out of ten Bolivian students are overweight and obese: 35.6% of the schoolchildren aged 5–18 in Bolivia are overweight (21.9%) or obese (11.1% obese, 2.2% severely obese resp.). Although most schoolchildren presented a normal nutritional status in both urban and rural areas, higher prevalence of overweight and obesity was found in urban areas and higher prevalence of undernutrition in rural areas (Ruegenberg Jerez et al., 2020).

In-country differences are common. A study on children under three years of age living in 75 rural communities in the Bolivian Andean regions found a prevalence of overweight and obesity of 10%, which is above the median in the country, even in territories with vulnerability and food insecurity (Aguilar Liendo, 2012). Region specific studies in the country have shown that in high altitude municipalities, such as La Paz and El Alto, there is a higher prevalence of obesity and overweight in people over 35 years of age and especially women (Soto, 2018).

9.2 Drivers

Drivers for overweight and in Bolivia included food insecurity, urbanisation, lifestyle transition, socio-economic and cultural factors, wealth status, poor diets being low in micronutrients and high in energy, and poor maternal, foetal and infant nutrition. As mentioned in Section 3.1, in-country differences are substantial, indicating that urbanisation and changing lifestyles are important drivers, alongside income and educational status (Aguilar Liendo, 2012; Ruegenberg Jerez et al., 2020; Soto, 2018).

9.3 Policy context

Food and nutrition policies and strategies

Bolivia has an extensive legislative compendium in favour of food security. Since the adoption of the new Political Constitution of the State, food has been recognised as a fundamental human right. Article 16 recognises that the State must guarantee a healthy, adequate and sufficient diet for the population. Since the adoption of the new Constitution, the State has also adopted a series of laws whose purpose is to establish the implementation parameters to guarantee the Right to Food, Security and Food Sovereignty. A review of the regulatory framework revealed that the efforts and resources to guarantee food security revolve around three thematic areas: national agricultural production, access to healthy food and the promotion of healthy consumption habits (Nogales, 2019, 2021). The Bolivian Patriotic Agenda, through the campaign on '*Saber comer para vivir bien*' (Knowing how to Eat to Live Well), focuses on strengthening local productive practices and guaranteeing that all productive efforts are aimed at satisfying the food needs of the Bolivian people with adequate and healthy products. The defined objectives for action are to take the necessary actions to eliminate hunger and undernourishment and reduce malnutrition; guarantee the

provision of complementary school feeding prioritising local production and small producers in the framework of nutrition education; diversify production of food, which is also culturally appropriate, for consumption by the population; protect and promote food cultures and traditions (Nogales, 2021).

Bolivia's policy aligned with the five-year Plan of Action for the Prevention of Obesity in Children and Adolescents, developed for the Americas (Pan American Health Organization, 2015). Among other measures, the plan called for the implementation of fiscal policies, such as taxes on sugar-sweetened beverages and energy-dense nutrient-poor products, regulation of food marketing and labeling, improvement of school nutrition and physical activity environments, and promotion of breastfeeding and healthy eating. As part of this process, the Multisectoral Food and Nutrition Plan 2016–2020 was developed. This plan encourages the Bolivian population to exert the human right to adequate food in conditions of food security within planetary boundaries, with the goal of reducing the percentage of overweight children to 3.5% (Government of Bolivia, 2015).

Non-Communicable diseases and health policies and strategies

NCDs were estimated in 2016 to account for 64% of all deaths (45 out of 900 in total)¹³, of which 27% were related to obesity. However, it seems that, apart from the five-year Plan of Action for the Prevention of Obesity in Children and Adolescents (Pan American Health Organization, 2015; World Health Organization, 2012), no national strategy on NCDs is in place. Given the NCD monitoring data presented by the WHO, it is likely that such a strategy exists, but it may not be publicly available.

Agriculture and food security policies and strategies

The State has adopted a series of laws with the purpose of establishing the implementation parameters to guarantee the Right to Food, Security and Food Sovereignty (Nogales, 2019, 2021). Laws most relevant to overweight and obesity were:

- *Law 144 on Agricultural Community Productive Revolution (2011)* – establishes policies to strengthen production and conservation of production areas, equitable exchange and marketing, research, innovation and ancestral knowledge and indigenous territorial management, and others.
- *Law 338 on Peasant Economic Organizations (2013)* – establishes policies to strengthen the integration of sustainable family farming, aiming to contribute to food sovereignty and security.
- *Law 070 on Education 'Avelino Siñani - Elizardo Pérez' (2010)* – establishes policies to strengthen formulation and implementation of and the education surrounding economic resources for specific social programmes to benefit students living in less favorable economic conditions, so they remain enrolled in the educational system.
- *Law 548 on the Girl, Boy and Adolescent Code (2014)* – establishes policies to ensure that girls, boys and adolescents, regardless of cultural background, have the right to an adequate standard of living ensuring their integral development. This includes the right to a nutritious and balanced diet in quality and quantity.
- *Law 622 on School Feeding (2015)* – establishes policies to strengthen the State's complementary school feeding programme in schools, sourced with local food, thus promoting local communities' economy.
- *Law 775 on the Promotion of Healthy Eating (2016)* – establishes policies to strengthen mechanisms to promote healthy eating habits in the Bolivian population to prevent chronic diseases related to diet.

¹³ https://cdn.who.int/media/docs/default-source/country-profiles/ncds/bol_en.pdf?sfvrsn=97733679_32&download=true

10 Egypt

10.1 Overweight and obesity

Egypt is one among the top 20 countries with the highest number of children suffering from chronic undernutrition even at times when the country experienced rapid economic growth. In 2018, an estimated 22% of children under the age of five were stunted, 13% were low birth weight or underweight, and 10% are wasted (IFAD, 2018a). There has been a general downward trend in stunting levels across the regions of Egypt. This is significant in both boys and girls, but prevalence has sharply increased in urban Upper Egypt¹⁴ in more recent years. Key determinants of stunting included being a boy, maternal education, size at birth, urban residence and residence in urban Upper Egypt (Herbst, Elshalakani, Kakietek, Hafiz, & Petrovic, 2020).

For the adult population aged 20 and over, the estimated prevalence of overweight and obesity (BMI \geq 25 kg/m²) was 61–70% of the entire population. Obesity was common among ever-married women aged 15–49; 48% were considered obese, and 37% were overweight (UN Egypt, 2019). Urban women were slightly more likely to be overweight or obese than rural women, and the percentage classified as overweight or obese ranged from 78% in rural Upper Egypt to 91% in urban Lower Egypt (Alebshehy, 2016; Ministry of Health and Population, El-Zanaty Associates, & ICF International, 2015).

Around 15% of children under five were classified as overweight (Ministry of Health and Population et al., 2015). This indicates the incidence of obesity earlier in the family cycle (Sedky et al., 2021). More than 33% of girls and boys aged 5–19 years were overweight or obese (Ministry of Health and Population et al., 2015). In addition, among the 14.9% of overweight children in Egypt in 2014, 7.6% were also stunted. This double burden should be considered in any strategy or intervention designed to tackle malnutrition (Herbst et al., 2020). In school-aged children and students, around 60% of children aged 5–19 years, regardless of sex, fell within the normal BMI range for their age. Two percent or less of children were thin or severely thin. One-quarter of girls aged 5–19 years were overweight, and 10% were obese. The proportion of boys found to be overweight (25%) or obese (11%) are similar to the levels found among girls. Among girls, the proportion who were overweight or obese rose with age. The opposite pattern was observed for boys (National Nutrition Institute & WFP, 2021; Samy et al., 2012). In a clinical study it was shown that obese children score significantly higher in Carotid intima media thickness tests (CIMT)¹⁵. This is associated with cardiovascular risk factors (Fathi et al., 2021).

National averages, however, obscure vast regional differences in under-nutrition prevalence (IFAD, 2018a). Abay et al. (2020) illustrated that, in Egypt, average rural bodyweights have been rising over the past few decades, sometimes at higher rates than in urban areas. The increase in obesity rates appears to be much higher for rural areas, jumping from about 15% in 1992 to 44% in 2015. Comparatively, the increase in obesity rates for the urban population went from 36% to 51%. This indicates that overweight and obesity trends have been increasing more in rural areas than urban areas.

10.2 Drivers

Drivers for overweight and obesity in Egypt included the following: low agricultural productivity which limited food availability, low household income which limited access to foods such as fruits, vegetables and animal protein. The latter resulted in poor diets that were low in micronutrients and high in energy. This accompanies poor dietary practices due to a lack of awareness and insufficient health service provisions

¹⁴ Urban upper Egypt: Urban Governorates (Cairo, Alexandria, Port Said, and Suez); <https://dhsprogram.com/pubs/pdf/FR176/01Chapter01.pdf>

¹⁵ The carotid intima-media thickness test (CIMT) is a measure used to diagnose the extent of carotid atherosclerotic vascular disease (Fathi, El Ghany, Taha, Hassan, & Fouad Ahmed, 2021).

(Herbst et al., 2020; National Nutrition Institute, 2021). There were other drivers related to education and wealth. Obesity in women is mostly found in women with a primary education or lower and who are poor or from rural groups. However, women who are wealthy but have lower education levels were also at risk of obesity compared to others who had received higher education. Although educated women may be more protected against obesity, it was still prevalent among educated and wealthy groups. In Egypt, 40.9% of wealthy, higher-educated women are obese compared to 53.9% of wealthy, uneducated women (Shahin, 2015).

Food policy related drivers were studied by Abay et al. (2020). They examined the rising levels of overweight and obesity in the Near East, North Africa, Europe and Central Asia (NEN) region and reported significant relationships between trade (food) policy indicators and food availability indicators as well as relationships between trade policies and body weight outcomes. A positive association was flagged in food subsidy programs and high body weight outcomes, building on the work of Ecker et al. (2016). Ecker et al. analysed the causal effects of the participation in Egypt's ration card program, the food subsidy amounts under the ration card program, and the food subsidy amounts under the Baladi bread and flour program on a large set of nutrition outcome indicators, using a quasi-experimental approach. Their estimations provided no statistically significant indication that higher food subsidies lead to improved nutritional outcomes. On the contrary, they found that higher food subsidies increased the risk of malnutrition among both children and their mothers, especially the risk of overnutrition in urban areas (Ecker et al., 2016). The findings of these authors contribute to evolving debates on economic affordability of food, cost of diets and the role of fiscal policies and instruments to combat obesity and associated NCDs (Abay et al., 2020; Ecker et al., 2016).

10.3 Policy context

Food and nutrition policies and strategies

Managing and controlling overweight and obesity in Egypt is undertaken by a myriad of actors from the government, the private sector, the non-profit organisations and the international organisations. Yet, redirecting the focus of the political agendas is still a challenge as stunting and other forms of undernutrition also remain persistent issues, as can be observed in the agendas of the Ministry of Health, the World Food Program (WFP), UN Egypt and the other initiatives by the civil society organisation. The issue of obesity is not specifically addressed in the national prevention strategy of Egypt or in governmental agendas (Shahin, 2015; UN Egypt, 2019; WFP, 2018).

The Egypt National Food and Nutrition Policy and Strategy (2007–2017) was developed as a part of the National Development Policy and the National Health Policy to address the challenges around food and nutrition security. The overall goal was to guarantee universal availability and accessibility to adequate high quality, safe food and promote healthy dietary practices for prevention and control of nutritional disorders. Intersectoral collaboration was embraced as a policy area leading to universal access to adequate food & nutrition (World Health Organization, 2007, 2015). The policy defines a list of twelve policy areas, two of which are highly relevant for overweight and obesity:

- Policy Area (9): Prevention and control of Non- Communicable/Chronic Diet-Related Diseases (NCDs);
- Policy Area (12): Promotion of Healthy Dietary Practices and Lifestyles Focusing on school Aged Children and Adolescents.

Two more recent global Summits — the United Nations Food Systems Summit¹⁶ and the Nutrition for Growth Summit¹⁷ in 2021 — presented an unprecedented window of opportunity for Egypt to generate political will for renewed commitments and nutrition action. The spotlight on nutrition generated by these global events has highlighted the importance for Egypt of having an updated national food and nutrition strategy, building on the achievements and recent progress of the National Nutrition Strategy 2007–2017. In recognition of the nutritional challenges and considering the Egyptian Government's commitment to realise the Sustainable Development Goals, the Ministry of Health and Population took the initiative for the renewal of a

¹⁶ <https://www.un.org/en/food-systems-summit/documentation>

¹⁷ <https://nutritionforgrowth.org/events/>

comprehensive national nutrition strategy. A working group of national stakeholders and UN experts was convened to develop a draft strategy which is still ongoing.

Non-Communicable diseases and health policies and strategies

A Ministerial Decree was issued in September 2014 to establish an NCD unit within the Egyptian Ministry of Health to initiate the process of formulating a National Strategic Agenda for NCDs. NCDs are the current leading cause of mortality, estimated to account for 85% of all deaths. NCD-related premature mortality (between ages 30 to 70 years) is occurring at 25% of the population (World Health Organization, 2015). Obesity is a major contributor to the development of diabetes mellitus (in nearly three quarters of all cases), hypertension, obstructive sleep apnoea and fatty liver. The estimated annual deaths due to obesity was about 115 thousand (19.08% of the total estimated deaths in 2020). DALYs (disability adjusted life years) attributable to obesity may have reached 4 million by 2020 (Aboulghate et al., 2021).

The National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases 2017–2021 (EgyptMAP-NCD) was the result of collaboration between the NCD with all relevant units/department in MOHP and non-health sectors along with the technical support of the World Health Organization. The EgyptMAP-NCD aimed to reduce exposure to risk factors and improve early detection and effective treatment of NCDs through primary health care approach. The Egypt MAP-NCD section included the national strategic agenda for NCDs and implementation plan (Ministry of Health, 2017a). Among the strategic areas defined, risk reduction and health promotion were particularly targeting overweight and obesity specifying initiatives to promote healthy diets (high in fruits and vegetables and low in saturated fat/trans-fat, sugar, and salt), and physical activity. Targets specified for diabetes and obesity were defined as: 'put a halt in rise of diabetes and obesity' in 2021 and 2025, starting from a baseline of 17.2% Diabetes, 31.3% obesity in 2016 (Ministry of Health, 2017a).

Agriculture and food security policies and strategies

Although Egypt progressed from a largely agricultural country to a country with a more diverse economy, agriculture remains an important sector in the Egyptian economy and a key pillar for food security.

Food self-sufficiency has long been and still is a key policy goal of Egypt targeting wheat and maize production (MALR, 2009; Tellioglu & Panos, 2017). The Sustainable Agricultural Development Strategy (SADS) towards 2030 (MALR, 2009) has formulated as a mission statement "Modernizing Egyptian agriculture based on achieving food security and improving the livelihood of the rural inhabitants, through the efficient use of development resources, the utilisation of the geopolitical and environmental advantages, and the comparative advantages of the different agro-ecological regions." The main strategic objectives of the SADS 2030 were defined as:

- Sustainable use of natural agricultural resources;
- Increasing the productivity of both the land and water units;
- Raising the degree of food security of the strategic food commodities;
- Increasing the competitiveness of agricultural products in local and international markets;
- Improving the climate for agricultural investment; and
- Improving the living standards of the rural inhabitants and reducing poverty rates in the rural areas.

The agricultural policies today are intertwined with the food subsidy system functioning as a driver of significant interventions in the agricultural sector, having an impact on production and cropping schemes, and price mechanisms (Kassim et al., 2018). For example, wheat yield to potential was among the highest in the world, but at the same time the wheat import dependency increased to 56% in 2017 as Egypt has become one of the world's largest importers of wheat due to its growing population and the food subsidy programme, which greatly favours bread consumption (ESCWA, 2021). Based on the food security monitoring framework for the Arab region, Egypt was performing well in terms of reduced undernourishment, but indicators such as food insecurity experience and obesity showed a serious underperformance meaning that the country still faces food security issues. Moreover, the marginalisation of selected parts of the population is associated with poor physical food access and is also hindered by rampant food inflation. Renewed and more targeted efforts are needed in the agricultural policy domain to reduce inequities, also in view of addressing the overweight and obesity concerns (ESCWA, 2021).

11 Nigeria

11.1 Overweight and obesity

According to Nigeria's 2018 Demographic and Health Survey (National Population Commission (NPC) [Nigeria] & ICF, 2019), 37% of children under five years of age were stunted (chronic undernutrition). Seven percent of children in this age category are wasted (acute undernutrition). On the other end of the spectrum, 2% of children under five are overweight. With this prevalence, Nigeria is on-track to achieve the World Health Assembly (WHA) target for 2025 on childhood overweight¹⁸ (Vanderkooy et al., 2019). Among women aged 15–49, 12% are thin, with a Body Mass Index (BMI) below 18.5. Twenty-eight (28) percent of women are overweight or obese (BMI of 25.0 or greater). The mean BMI among women is 23.3. While the proportion of women who are thin has remained stable over the past ten years, the proportion of women who are overweight or obese has increased by 6% during that period. As women age, they are more likely to be overweight or obese. While 67% of women aged 15–19 has normal weight, this number is 52% among those aged 40–49.

11.2 Drivers

Drivers for overweight and obesity in Nigeria included changing consumption and lifestyles. Based on the documents reviewed an anecdotally observed changing consumption pattern towards unhealthy diets was noted that are high in salt, sugar and trans-fats. A meta-analysis was carried out to inform the formulation of a Multi-Sectoral Action Plan for the Prevention and Control of Non-Communicable Diseases (NCDs). It broadly defines unhealthy diets as "having less than 3–5 servings of fruits and vegetables per day, and/or daily intake of high fat or high sugar meals." The meta-analysis showed a prevalence of unhealthy diet consumption of 74.8%, with similar prevalence for both men and women. Other drivers for NCDs mentioned in the studied documents include globalisation, urbanisation, lifestyle transition, socio-cultural factors, obesogenic diets, and poor maternal, foetal and infant nutrition (Federal Republic of Nigeria, 2016, 2017, 2019a, 2019b; Vanderkooy et al., 2019)

11.3 Policy context

Food and nutrition policies and strategies

The National Policy on Food and Nutrition in Nigeria was produced by the Ministry of Budget and National Planning in 2016 (Federal Republic of Nigeria, 2017). It aimed to attain optimal nutritional status for all Nigerians, with particular emphasis on the most vulnerable groups such as children, adolescents, women, elderly, and groups with special nutritional needs. The policy explicitly requested other initiatives from government or partners to align to it. By 2025, the policy seeks to have realised a list of ten objectives, the most relevant to overweight and obesity being Objective 6: "To prevent and control chronic nutrition-related noncommunicable diseases." Related targets include:

- Objective 10 – Reduce prevalence of diet-related non-communicable diseases by 25% in 2025;
- Objective 18 – To arrest the emerging increase in obesity prevalence in adolescents and adults by 2025.

Various activities were conceived to contribute to these targets. Under the umbrella term 'healthy diets', the following activities were proposed:

- Promote good dietary habits and healthy lifestyles for all age groups through appropriate social marketing and communication strategies;

¹⁸ World Health Assembly (WHA) 2025 target on childhood overweight: No increase compared to baseline year 2014
https://apps.who.int/iris/bitstream/handle/10665/149021/WHO_NMH_NHD_14.6_eng.pdf?sequence=2&isAllowed=y;

- Support the design and implementation of appropriate community-based nutrition education programmes;
- Develop appropriate food-based dietary guidelines for healthy living;
- Promote healthy eating habits to reduce the incidence of noncommunicable diseases such as diabetes, hypertension, and other cardiovascular disorders, etc. (reduction of salt and sugar intake, preparation methods to reduce fat intake, etc.), and
- Promote regular physical exercise and periodic medical check-ups for nutrition-related, non-communicable diseases.

More recently, the Nigeria National Pathways to Food System Transformation were developed and submitted to the UN Food System Summit in 2021. IFAD supported the rural dialogues, which were the basis of the development of the National Pathways. The pathways set the expected impact of food system transformation for equitable livelihoods as well as resilience to vulnerabilities, shocks, and stresses, and the consumption of sustainable and adequate quantities of safe, nutritious foods produced using sustainable and nature-positive approaches. One of the impact indicators is to track the percent reduction in overweight/obesity prevalence. To achieve the reduction in overweight/obesity prevalence, the Pathways set a series of prioritised actions to be implemented under Country Cluster 1: Investing in food security and nutrition knowledge dissemination, skills' development, and information management systems to enhance agricultural productivity (UN Nutrition, 2021).

Non-Communicable diseases and health policies and strategies

The National Multi-Sectoral Action Plan for the Prevention and Control of Non-Communicable Diseases (2019–2025) provided the most insight into the intervention strategies that Nigeria planned to use to address overweight and obesity (Federal Republic of Nigeria, 2019b). The strategy identified 'Unhealthy Diet' as one of four major modifiable behavioural risk factors to NCDs, other modifiable behaviour risk factors being tobacco use, physical inactivity, and the harmful use of alcohol. It proposed concrete actions to promote healthy diets, including¹⁹:

- Reduce salt intake through the reformulation of processed food products to contain less salt as well as setting target levels for processed foods and adopt standards for front-of-pack labelling. Reduce sugar consumption through effective taxation on sugar-sweetened products. This tax has been implemented by the National Action on Sugar Reduction (NASR) coalition. The federal government has introduced an excise duty of 10 naira per litre on all non-alcoholic, carbonated and sweetened beverages. Excise duty is a form of tax imposed on the production, licensing and sale of goods.
- Promote, protect and support exclusive breastfeeding within the first hour of birth and for the first six months of life.
- Replace trans-fats and saturated fats with unsaturated fats through reformulation, labelling using fiscal policies and/or agricultural policies. Awareness raising is also foreseen. This action is currently starting up, headed by the National Coalition on Trans Fat Free Nigeria.
- Limiting portion and package size to reduce energy intake and the risk of overweight/obesity.
- Implement nutrition education and counselling, mass media and behaviour change campaign on healthy diets including social marketing to reduce the intake of total fat, saturated fats, sugar and salt, and promote the intake of fruits and vegetables.

The plan outlined a role for the Federal Ministry of Agriculture and Rural Development (FMARD) and, by extension, the agricultural sector. This role was to promote food safety and nutrition through agricultural production and ensure quality control and standardisation for healthy options. FMARD's involvement in the review of the curriculum and content for nutrition education was also foreseen.

Agriculture and food security policies and strategies

Like the Multi-Sectoral Action Plan for the Prevention and Control of NCDs, the Agricultural Sector Food Security and Nutrition Strategy (2016–2025) defined improved food security and nutrition as main goals of the intended agricultural transformation including the prevention of overweight and obesity and promotion of healthy diets (Federal Republic of Nigeria, 2017). The strategy identified eight interrelated priorities, three of which refer to nutrition and the reduction of overweight and obesity, namely:

¹⁹ Not all of these actions target NCD prevalence by modifying overweight and obesity as a risk factor. For example, while trans fats are shown to have a negative impact of NCD risk, they may not exert their effect through an increased BMI.

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- *Enhance value chains for improved nutrition:* Value chains can improve nutrition by increasing nutrient content, preventing the loss of nutrients, decreasing anti-nutrients, increasing ease of preparation, and/or improving food safety; while educating actors along the chain about the nutrition benefits of added value. This priority area links the nutrition problems of target populations with possible constraints in the supply and demand of specific foods that are then addressed by interventions, whilst also expanding market access.
 - *Diversify household food production and consumption, especially targeting women, and increase access to micronutrient rich foods:* Diversifying crop production of farming households can increase their access to nutritious foods and the stability of food supply. Increased access to fruits and vegetables is one of the most sustainable ways to reduce and prevent micronutrient deficiencies in resource poor communities. The priority area focuses on increasing the production of fruits and vegetables. This focus has implications for the reduction of both undernutrition and overweight and obesity and the incidence of diet related non-communicable diseases. Targeting women will increase their control over resources and decision-making, with attendant benefits for nutrition.
 - *Nutrition education, social marketing, behaviour change communication, and advocacy:* The various nutrition-sensitive agriculture initiatives require concerted and consistent information dissemination and social dialogue and provide a platform for nutrition education and behaviour change. This priority area will ensure successful and sustained nutrition education and behaviour change by combining educational and communication strategies delivered through multiple channels; and accompanied by environmental support designed to facilitate the voluntary adoption of healthy food choices and other food and nutrition-related behaviours conducive to health and wellbeing.

A specific activity that was described was the provision of adequate and diverse nutritious foods to address undernutrition, micronutrient deficiencies, and overweight/obesity for school-aged children. Interventions included school-based interventions that promote healthy diets and lifestyles and build household resilience, while boosting livelihoods and the local agricultural economy (e.g. school feeding linked to local agriculture and school gardening). Nutrition education and behavioural change initiatives were also promoted. The Federal Ministry of Agriculture and Rural Development (FMARD) intended to monitor and evaluate the progress made in achieving the objectives it outlines in the strategy.

12 Zambia

12.1 Overweight and obesity

The prevalence of undernourishment in Zambia is among the highest in the world, with 48% of people unable to meet their minimum calorie requirements. Stunting rates among children under the age of five have persistently been remarkably high ($\geq 30\%$) for decades. The COVID-19 pandemic had a negative impact on Food and Nutrition Security (FNS). Zambia's latest Demographic health Survey (2018) shows that 35% of children under age five are stunted, 4% are wasted, 12% are underweight and 5% are overweight. Children in rural areas (36%) are more likely to be stunted than those in urban areas (32%). Overall, 13% of children aged 6–23 months were fed a minimum acceptable diet²⁰. Children in urban areas are more likely to receive a minimum acceptable diet than children in rural areas (18% and 9%, respectively) (Zambia Statistics Agency et al. 2019).

Overnutrition is recognised as an emerging public health problem in Zambia. In 2014 (ZDHS 2014) estimates were that 23% of women 15 to 49 years of age were overweight (16%) or obese (7%). Currently, 9% of the women 15–19 are overweight or obese as compared with the 36% in the 40–49 age group (National Food and Nutrition Commission, 2017). More recent estimates (STEPS survey 2017) show 33% of adult (18–69 years) women being overweight and 12% obese versus 16% of adult men being overweight and 3% being obese (Central Statistical et al., 2015; USAID, 2021; World Health Organization, 2017; Zambia Statistics Agency et al., 2019).

12.2 Drivers

Drivers for overweight and obesity in Zambia mostly related to urbanisation and the lifestyle transition associated with it. The main contributors to malnutrition more generally were poor dietary diversity, micronutrient deficiencies, socio-economic conditions, inadequate mother and childcare and poor environmental and sanitary conditions. Structural inequalities and policy gaps also contributed significantly, such as a lack of national guidelines for food fortification (IFAD, 2015b; WFP, 2019).

12.3 Policy context

Food and nutrition policies and strategies

In the latest eighth National Development plan for Zambia, obesity and overweight, and persistent high levels of stunting and wasting in children under five, were recognised as important risk factors for hypertension, cardiovascular disease and some cancers. The prevalence of obesity among women increased significantly from 22.8% in 2014 to 32.5% in 2017 (Minister of Finance and National Planning, 2021). The National Food and Nutrition Commission under the Ministry of Health is leading the implementation of Zambia's second National Food and Nutrition Strategic Plan (NFNSP) for Zambia (2017–2021). It built on the achievements of the first strategic plan (2011–2015) to better operationalise the National Food and Nutrition Policy (NFNP) of 2006. (National Food and Nutrition Commission, 2011). It outlined five strategic areas and nine key strategic directions to combat malnutrition in all its forms. Overweight and obesity, however, were not explicitly embraced and only mentioned in relation to dietary related risks for NCDs (Ministry of Health, 2006, 2020; National Food and Nutrition Commission, 2017).

²⁰ The Minimum Acceptable Diet (MAD) for children 6–23 months old is a composite indicator composed of the Minimum Dietary Diversity (MDD) and Minimum Meal Frequency. The MAD is one of eight core indicators for assessing infant and young child feeding (IYCF) practices developed by the WHO and finalised at the World Health Organization (WHO) Global Consensus Meeting on Indicators of Infant and Young Child Feeding in 2007; https://apps.who.int/iris/bitstream/handle/10665/43895/9789241596664_eng.pdf?sequence=1

The current NFNSP has defined nine Operational Strategic Directions and Strategies (ODS). These emphasise multisector efforts to strengthen and expand interventions related to and promote 'the First 1000 Most Precious but Critical Days'. These prevent stunting in children less than two years of age and bring added health and productivity to Zambian families and the productivity of the nation. One ODS is relevant for overweight and obesity: Nutrition related non communicable disease prevention and management. Impact areas are geared towards:

- High impact interventions that address stunting, wasting, anaemia, and exclusive breastfeeding;
- Obesity/overweight and nutrition related non-communicable diseases;
- Policy development, strengthening and expanding services across the interventions, and
- Mainstreaming nutrition specific and nutrition-sensitive interventions within each sector (National Food and Nutrition Commission, 2017).

Non-Communicable diseases and health policies and strategies

The Zambian Strategic Plan 2013–2016 on Non-Communicable Diseases aimed to achieve a long and healthy life for all through the prevention and control of noncommunicable diseases and their risk factors. It also aimed to reduce the burden of preventable morbidity, disability and premature mortality occasioned by NCDs in Zambia. The Zambian Strategic Plan set out nine objectives, two of which were relevant for overweight and obesity:

- Objective 2: To reduce modifiable risk factors for NCDs and underlying social determinants through creation of health-promoting environment, specifying actions and underlying social determinants;
- Objective 4: To strengthen and orient health systems to address the prevention and control of NCDs and the underlying social determinants through people centred primary health care and universal coverage (Ministry of Health, 2012).

Key interventions focused on promotion of appropriate nutrition practices; creation of awareness and empowering communities to adopt and sustain recommended nutrition practices; strengthening multi-sectoral collaboration; and mainstreaming and integrating nutrition programmes into other health programmes. Other focus areas were strengthening the capacity of the nutrition workforce at all levels; improving nutrition supply chain management and strengthening the legal framework for nutrition interventions.

The National Health and Strategic Plan (NHSP) 2017–2021 included overweight and obesity. The NHSP goal on nutrition was to reduce under and overnutrition and improve clinical nutrition by 2021. Some of the strategies mentioned on nutrition focused on improving nutrition in the lifecycle. Strategies related to increasing access and utilisation of high-impact nutrition-specific interventions; improving coordination and systems that support delivery of nutrition services; promoting generation and use of evidence for improved nutrition programming; strengthening the legal, regulatory, and policy framework for nutrition programmes; strengthening capacity for clinical nutrition care services at the health facility level (Ministry of Health, 2016b).

Agriculture and food security policies and strategies

The second National Agriculture Policy 2016 has the vision of "An efficient, competitive and sustainable agricultural sector which assures food and nutrition security, increased employment opportunities and incomes." (Ministry of Agriculture, 2016). The Policy provided a framework promoting sustainable agricultural diversification, agricultural commercialisation, private sector participation and inclusive agricultural growth, thus contributing effectively to attain food and nutrition security, employment creation, increased incomes and reduced rural poverty. The Policy maintained a strong focus on food and nutrition security, without reference to overweight and obesity. Of the ten objectives, Objective 7 dealt with improving food and nutrition security. The set of suggested measures was to promote:

- diversification of agricultural production and utilisation (conduct training in food processing & preservation, increase crop diversification index);
- access to bio-fortified seed or vines for the production nutrient enhanced varieties;
- on-farm agro-processing;
- value addition in the agriculture sector;
- on-farm storage of food commodities;
- the preservation and utilisation of nutrient rich food;
- cultivation and consumption of indigenous crop varieties;

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- determine and reduce post-harvest losses (construct/rehabilitate silos, construct cooperative storage sheds, fumigation);
 - nutrition education, and
 - production and utilisation of nutritious food (Ministry of Agriculture, 2016).

13 Indonesia

13.1 Overweight and obesity

Indonesia is experiencing a triple burden of malnutrition characterised by the coexistence of macro and micronutrient deficiency alongside obesity. According to the national health survey 2022 (SSGI), in toddlers, the prevalence of stunting in 2022 was 21.6%, of wasting 7.7%, of underweight 17.1% and of overweight 3.5% (BKPK, 2022). Evidence on the developments in overweight and obesity are mixed. Data on overweight and obesity in children less than five years of age indicate a downward trend, with 11.8% overweight in 2013 to 3.5% in 2022 (BKPK, 2022). Of children aged between five and ten years, 26% were overweight or obese, and 19% of adolescents aged 10 to 20 years were overweight or obese (Figures 6 and 7; Global Health Observatory 2016). The rate of overweight and obesity among adults reached 35.4% in 2018, with obesity contributing 21.8% (Agency of Health Research and Development, 2018). Obesity in adults significantly increased from 15% in 2013 to 21.8% in 2018 (Agency of Health Research and Development, 2018; Arif et al., 2020; Gani, 2019; Kementerian PPN & Bappenas, 2021; WFP, 2019). In addition, the proportion of the population with low physical activity was 33.5% (Dewi et al., 2021). Regional differences are also present: North Sulawesi has the highest obesity prevalence, whereas East Nusa Tenggara (Nusa Tenggara Timur – NTT) has the lowest (Gani, 2019; WFP, 2019).

Obesity is more prevalent in adult women than in men (Figure 7; Global Health Observatory 2016 (Kementerian PPN & Bappenas, 2021; Ministry of Health, 2017b, 2019; World Food Programme, 2020). Riskesdas (2018) showed that 29.3% of the adult women (aged 18 and above) experienced obesity compared to 14.5% of adult men (Agency of Health Research and Development, 2018). Overnutrition is more prevalent in urban than in rural areas. Among adults, the 2018 Riskesdas data showed that 17.8% of rural adults were obese compared to 25.1% of adults in urban areas (Agency of Health Research and Development, 2018; Arif et al., 2020; Kementerian PPN & Bappenas, 2021; Ministry of Health, 2019).

13.2 Drivers

Drivers for overweight and obesity in Indonesia included poor dietary diversity with low consumption of vegetables and high consumption of fat and oil (Dewi et al., 2021). These trends occurred alongside changing consumption patterns illustrated by a rise in expenses on preserved and processed food and beverages (Gani 2019). Other drivers related to urbanisation, infrastructure, technology and industry (FSN NSP 2021). Sedentary jobs and lower physical activity during leisure time may partly explain the higher prevalence of overweight and obesity in urban areas but are not restricted to urban areas alone (Roemling & Qaim, 2012).

People from higher income groups were more prone to overweight and obesity. According to Aizawa and Helble (2017), a 1% increase in a household's wealth was associated with an increase of 0.6% in the probability of being overweight or obese. However, evidence indicated that the increase in prevalence of overnutrition is increasing rapidly among poor households. Drawing on five rounds of Indonesian Life Family Surveys (1993, 1997, 2000, 2007 and 2014), Aizawa and Helble (2017) showed that while obesity among the richest quintile grew by 3.8% per year between 1993 and 2014, it rose by 8.3% per year among the poorest quintile. No documents were identified that had more up-to-date information about this trend.

13.3 Policy context

Food and nutrition policies and strategies

The National Action Plan for Food and Nutrition (2011–2015) flagged the risk of the triple burden of malnutrition without making concrete targets or actions (Minister of National Development Planning, 2010). A 2020 policy analysis mentioned that Indonesia was facing big challenges in increasing and diversifying food production to support nutritional improvement towards more balanced diets. Recommendations made included the need to broaden the policy focus beyond stunting to address the triple burden of malnutrition, to promote a balanced diet through social and behavioural change communication with the population, and to improve access to diversified food through the development of diversified, resilient and nutrition-sensitive food systems (Arif et al., 2020). Building on these, the current Food and Nutrition Action Plan 2021–2024 explicitly embraces the topic of obesity and the multisectoral policy approach needed to translate the different strategies into various policy areas, down to the level of targets, including targets for obesity. Its main objective is to increase nutritional investment and implement policies and programmes to improve food security and nutrition. The Food and Nutrition Action Plan 2021–2024 sets out overweight and obesity specific targets for 2024, which are consistent for the different strategies and domains:

- Prevalence of obesity >18 years should not increase and remain at the 2018 baseline level of 21.8%. Moreover, data should be gender disaggregated;
- Consumption of vegetables and fruit should reach 316.3 grams/capita/year;
- The number of districts/cities that have a Food and Nutrition Alert System (SKPG) portal should be 514 districts/cities;
- Increased role of local government in Movement Against Obesity (GENTAS)²¹ and implementation of Post Training in the village should reach 50% of the districts/active cities;
- Increased number of women’s organisations (district/city) with capacity to implement GERMAS, a healthy lifestyle movement to control obesity.

Priority is particularly placed on the acceleration of community nutrition improvements. (BAPPENAS, 2021; Kementerian PPN & Bappenas, 2021).

In 2021, following the UN Food Systems Dialogues, the Indonesia strategic national pathway for food systems transformation was developed. The National Development Planning Agency (BAPPENAS) acted as National Convenor and catalyst of the process. The vision expressed that “By 2030 all Indonesian will benefit from healthy and nutritious food, equitable livelihoods, sustainable food consumption and production, and established resilience resulting from food systems transformation.” Nutrition emerged under the priority area Inclusive Governance, which includes strengthening food logistic and infrastructure that enables food access for all people in Indonesia. It also includes strengthening national and local food systems’ planning capacity by integrating indicators of nutritional quality/value and diversified consumption in food systems planning; and providing economic and fiscal incentives regarding healthy food (BAPPENAS, 2021).

Non-Communicable diseases and health policies and strategies

The Prevention and Control in Indonesia NCD Strategic plan (2015–2019) showed that NCDs accounted for 71% of deaths in 2014. The NCD strategic Plan 2015–2019 went hand in hand with an NCD action plan 2015–2019. The prevention and control approach on NCD risk factors contained four strategies:

- Advocacy, partnerships, leadership, and management of NCDs,
- Health promotion and prevention of NCD risk factors throughout the life course through community empowerment,
- Strengthening health services’ infrastructure and capacity, and collaboration with private sector, and
- Strengthening NCD surveillance and research.

Overweight and obesity were not specifically addressed. Activities with a bearing on overweight and obesity related to promotion of healthy behaviour, community-based interventions such as strengthening the Posbindu, the community health post for NCD prevention activities, and launching GERMAS, a healthy

²¹ A set of action plans were introduced in 2015–2016, namely the ‘Gerakan Nusantara Tekan Angka Obesitas (GENTAS)’ [the Nusantara or national movement to reduce the obesity rates] programme aimed to lower obesity rates, the ‘Gerakan Masyarakat Hidup Sehat (GERMAS)’ [healthy community movement] and ‘Program Indonesia Sehat dengan Pendekatan Keluarga (PIS-DPK)’ [healthy Indonesia programme with family approach], aimed to control and prevent NCDs (Pujilestari, 2018).

lifestyle movement under Presidential Instruction. Both intervention strategies are launched nationwide across diverse types of communities (Ministry of Health, 2016a).

Agriculture and food security policies and strategies

Indonesia's main agricultural policy instrument was the Food Law 2012, which shaped Indonesia's current agricultural policy and set of core objectives. The Food Law set out the principles for self-reliance and food sovereignty as the desired approach to food security (OECD, 2021). The law stipulated that the domestic food demand be fulfilled by imports if local food sources are insufficient. The Strategic Plan of the Ministry of Agriculture 2020–2024 confirmed the Law's principles;

- Achieve self-sufficiency in the production of selected staple-food commodities (rice, maize, soybeans, sugar and beef) to assure food security;
- Ensure food prices are affordable for consumers across the archipelago; diversifying production and consumption away from carbohydrates (rice and wheat) towards animal-based products, and fruits and vegetables (particularly root vegetables);
- Raise the competitiveness of agricultural production and value-added processing;
- Increase the availability of raw materials for bio-industry and bioenergy; and
- Improve the welfare of farmers through higher incomes to reduce the level of rural poverty.

Indonesia pursued policy objectives through both domestic and trade measures. Domestic policy measures included minimum purchase prices for rice and sugar, substantial budgetary allocations for inputs, and the provision of services to the agricultural sector as a whole. The latter was especially related to irrigation, research and development, and marketing and promotion. In 2019, the Rastra food assistance programme was replaced by the BPNT²², a social safety net programme coordinated by the Ministry of Social Affairs. Under the BPNT eligible households receive IDR 150,000 (USD 10.3) per month on a purchasing card that can be used to buy rice at the market price from selected retailers (OECD, 2021).

²² BPNT: Bantuan Pangan Non Tunai, Non-Cash Food Assistance Programme.

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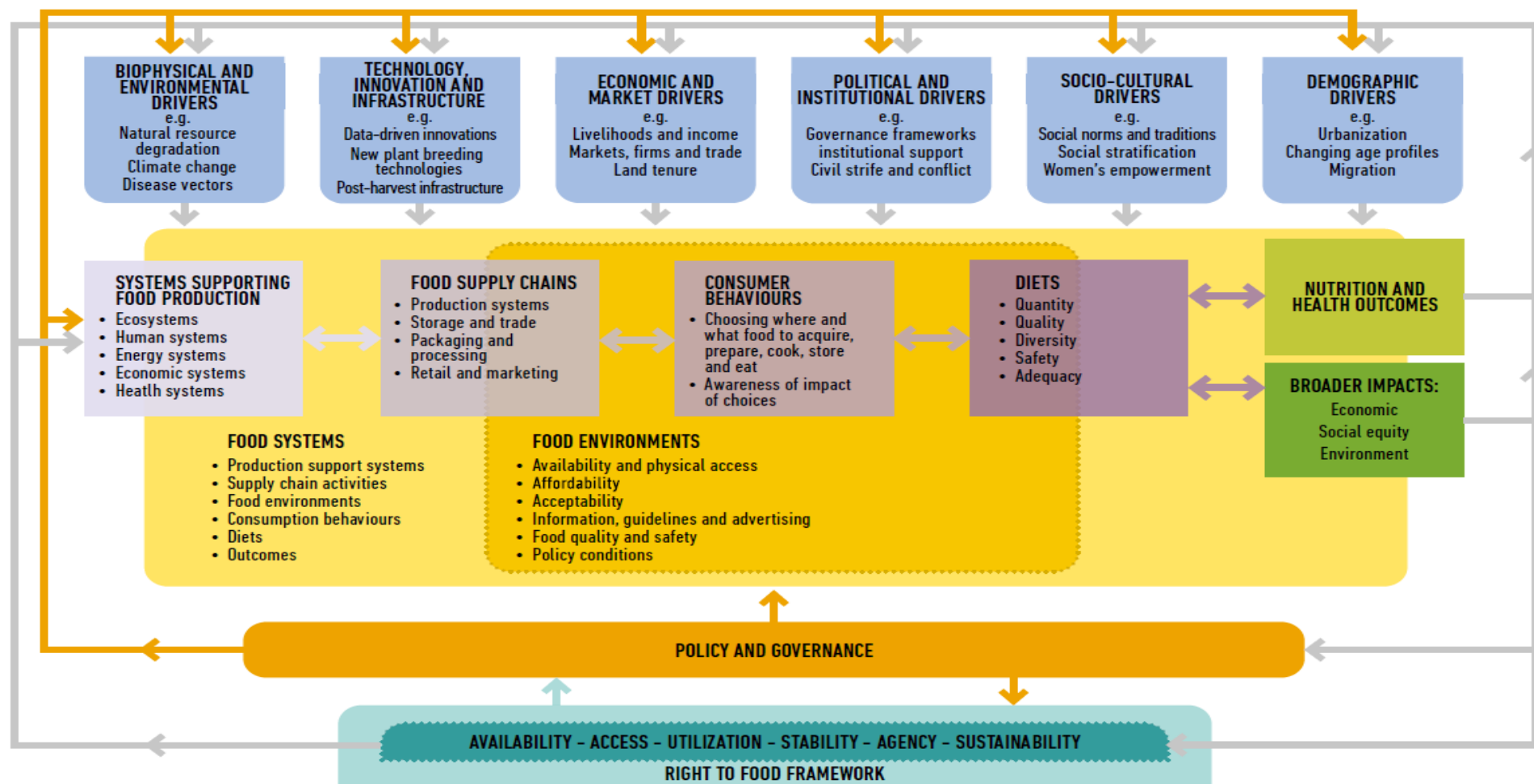
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Appendix 1 Sustainable Food Systems Framework



Appendix 2 Overview of documents reviewed

Category	Country				
	Bolivia	Egypt	Nigeria	Zambia	Indonesia
IFAD Programme documents on Loans and grants (COSOPs, Project Design and Supervision Reports)	7	12	14	30	15
National and sub-national policy and strategies, incl. UNFSS pathways, action plans (Food and Nutrition, NCDs, Health, Agriculture)	4	6	6	6	4
Food Based Dietary Guidelines and Dietary guidelines			1	1	1
Secondary sources (Demographic health surveys/SMART surveys, Nutrition profiles, Household expenditure and income surveys, Food systems dashboards, Consumption surveys, STEPs surveys)	1	4	2	2	5
Country specific peer reviewed scientific articles on overweight and obesity	3	5	1		4
Other documents (e.g. Student theses, newsletters, training materials, research reports)	1	4	1	1	1

Appendix 3 Coding list

Code	Subcode level 1	Subcode level 2
Bolivia		
Egypt		
Indonesia		
Nigeria		
Zambia		
Context	Key actors	
	Prevalence	
	Targets	
Q1 Drivers	Biophysical & Environmental drivers	Environmental contamination
	Consumer behaviour	Chronic psychosocial stress
		Individual-based motives of food choice
		individual-based motives PA behaviour
		Poor quality sleep
		Tobacco smoking
	Demographic drivers	Gender, age
		Genetic predisposition
		Level of education
		Urbanisation
	Diets	cost of diets
		Dietary quality
		High-energy diets
	Economic & Market drivers	Economic development
		Income inequality
	Energy expenditure	Low energy expenditure
	Food environment	Convenience of junk food
		Food deserts and swamps
	Food supply chains	Advertisements
		Globalisation of food supplies
		Increased food energy supply
		Use of added sugar
		Use of vegetable oils
	Nutrition and health outcomes	Birth weight
		Child nutrition
		Exclusive breastfeeding and infant weight gain
		Food security status
		Gut microbiome
		Maternal BMI and diet
		Pregnancy
	Political and institutional drivers	Hesitance to regulate the market
		Policies to increase food supply
		Policy inertia
	Socio-cultural drivers	Perception of body shape and overweight
		Prestige of unhealthy foods
		Social acceptability of PA
	Technology, Innovation & Infrastructure drivers	Physical activity replaced by technology
		Poor PA environments

Code	Subcode level 1	Subcode level 2
Q2 Interventions	Consumer behaviour	
	Diversified diets	
	Food environment	
	Food supply chains	Advertisements
		Focus on a single food item
		Food package labelling
		Nutrition sensitive agriculture
	PA activities	
	Policy & Governance	Taxation and price agreements
	Research	
Q3 IFAD Target groups	Indigenous peoples	
	People with a disability	
	Rural populations	
	Women	
	Youth	
Q4 Good practices O&O interventions	Barriers and constraints	
	Enabling factors	
Additional interesting references		

Appendix 4 Overview of IFAD documentation reviewed

Category	Country				
	Bolivia	Egypt	Nigeria	Zambia	Indonesia
COSOP	COSOP 2021–2025 (2020)	COSOP 2019–2024 (2018)	COSOP 2016	COSOP 2011	Indonesia Interim Country strategy 2014–2015
					COSOP 2016–2019
PDRs	ACCESOS Rural Project Design Report 2019	PRIDE Project Design report	LIFE-ND Project Design Document November 2017	E-SLIP Project design report	UPLANDS Project Design Report 2019
	PRO-CAMELIDOS Project Design Report 2016	SAIL Project Design Report 2014	VCDP Design Report April 2012	RUFEP Project Design Report	IPDMIP Project design Report
		STAR Project Design Mission 2019	Special Agro-Industrial processing zone (SAPZ) Design Report	E-SAPP Design Report	READSI Project design Report 217
Progress reports	PRO-CAMELIDOS Supervision Report September 2017	Egypt PRIDE Supervision Report December 2021	LIFE-ND Supervision Report April 2021	E-SLIP Supervision Report May 2016	UPLANDS Supervision Report November 2020
	PRO-CAMELIDOS Supervision Report March 2018		LIFE-ND Supervision Report October 2021	E-SLIP Supervision Report October 2016	UPLANDS Supervision Report January 2022
	PRO-CAMELIDOS Supervision Report November 2018	SAIL Supervision mission December 2016	VCDP Supervision report June 2019	E-SLIP Supervision Mission Report 2017	IPDMIP Supervision Report December 2018
	PRO-CAMELIDOS Supervision Report December 2020	Egypt SAIL Supervision mission December 2017	VCDP Supervision report May 2015	E-SLIP Supervision Report May 2018	IPDMIP Supervision Report November 2019
	PRO-CAMELIDOS Supervision Report October 2021	SAIL Supervision mission December 2018	VCDP Supervision report June 2016	E-SLIP Supervision Report October 2018	IPDMIP Supervision Report September 2020
		Egypt SAIL Supervision Report December 2020	VCDP Supervision report July 2017	E-SLIP Supervision Report August 2019	IPDMIP Supervision Report January 2021
		Egypt SAIL Supervision Report December 2021	VCDP Supervision report August 2020	E-SLIP Supervision Report June 2020	READSI Supervision Report May 2019
		Egypt SAIL Supervision Report July 2021	VCDP Supervision report October 2019	E-SLIP Supervision Report May 2021	READSI Supervision Report November 2020
			VCDP Supervision report November 2021	E-SLIP Supervision Report April 2022	
			RUFEP Supervision mission April – May 2016		

Category	Country				
	Bolivia	Egypt	Nigeria	Zambia	Indonesia
				RUFEP Supervision Report November 2016	
				RUFEP Supervision mission October – November 2017	
				RUFEP Supervision Report May 2018	
				RUFEP Supervision Report September 2018	
				RUFEP Supervision Report August 2019	
				RUFEP Supervision Report June 2020	
				RUFEP Supervision Report July 2021	
				RUFEP Supervision Report February 2022	
				E-SAPP Supervision Report October 2018	
				E-SAPP Supervision Report August 2019	
				E-SAPP Supervision mission November 2019	
				E-SAPP Supervision Report March 2021	
				E-SAPP Supervision Report February 2022	
Evaluation and other reports		COSOP – Mid-term review 2015	VCDP Mid-term Review Report March 2018	E-SAPP Nutrition Survey Report 2021	COSOP Results Review August 2015
				Progress of Activities in Zambia (IFAD Zambia)	COSOP Results Review December 2020
				RUFEP Nutrition Training Manual	

Appendix 5 Enablers and barriers for interventions addressing overweight and obesity

	Country					
	Bolivia	Egypt	Nigeria	Zambia	Indonesia	
Enablers*	International dialogue	UNFSS Dialogues and follow up dialogues SDG 2 and SDG 3 as reference framework	UNFSS Dialogues and follow up dialogues Nutrition for growth summit: Egypt made commitments on obesity COP27 – Egypt focus on water scarcity. Nutrition in the realm of climate change to be addressed	UNFSS Dialogues and follow up dialogues	UNFSS Dialogues and follow up dialogues	UNFSS Dialogues and follow up dialogues
	Policy leadership		Presidential initiative (1,000 million healthy lives campaign) with current focus on nutrition, including overweight and obesity			Presidential Instruction for the GERMAS campaign
	Existing policy & institutional arrangements	Many institutions that currently working on policy and projects	Nutrition infrastructure established (from research to cap. building, intervention strategies): NNI Go: multi-sectoral committees to create guidelines/protocols on management childhood obesity	Nutrition Policy framework and strategies	Nutrition Policy framework and guidelines available Legal framework on food safety Enforcement required at the implementation level.	Nutrition national action plan builds on multisectoral policy approach translating different strategies into various policy areas, under guidance of MoH
	Existing collaboration with international and national actors	Collaboration with UN (WHO), World Diabetes Federation, (I)NGOs	Ongoing stakeholder consultation on new Food and nutrition security strategy	Collaboration with UN (FAO, WFP, WHO), (I)NGOs, SUN	Collaboration with UN (FAO, WFP, WHO), (I)NGOs. SUN platform bringing all stakeholders together	Collaboration with UN (FAO, WFP, UNICEF), (I)NGOs.
	Ongoing trends and growing awareness	New trends for healthy food and physical activity	Through campaigns and media (School children campaign in MOH and MoE); growing consumer appetite for healthy food and physical activity (urban)	Growth in awareness among well-educated population, shift from nutrition education to overall behaviour change and changing cultural perceptions.	Growth in awareness in both urban and rural areas (maybe related to information around Covid)	Through campaigns and media: growth in awareness in both urban and rural areas through media; growing consumer appetite for healthy food and physical activity (urban)

	Country				
	Bolivia	Egypt	Nigeria	Zambia	Indonesia
Information and data availability	Recent surveys create opportunities to work (EDSA, WHO)	Increase in studies on obesity, diabetes mellitus, hypertension providing insights into prevalence in relation to NCDs		Existing knowledge gaps are opportunities for further research avenues and build evidence	
Lack of policy coherence or political will		Central group/body for nutrition needed to coordinate with different sectors, produce policies.	Lack of legislation to make the food system more 'friendly' (in terms of healthy diets'	Not recognising overweight and obesity as a public health problem. Nutrition agenda predominantly set by donors, still much on undernutrition.	Conflict of interest between policies: mandatory policies on food labeling in conflict with policies of the Ministries of Trade and the Ministry of Industry supportive to economic and business interests
Poor multilevel collaboration	Groups, NGOs and platforms do not easily collaborate with government institutions	Private medical sector needed as important partner but a challenge to collaborate Formal/governmental strategy on collaboration is lacking. Projects are short-term and work in isolation.			
Countervailing force of industry	The ultra-processed industry has the resources to spread its products to the detriment of healthy foods	Lack of compliance of private entities and food industry with policy and guidelines that aim to target obesity. (Herbst 2020) Advertising of non-healthy foods in marketing. Media in general a barrier (20 channels exist to help people make unhealthy food)		Lack of compliance & alignment: Legal framework exists (enabler in theory) but is not enforced (barrier in practice).	
Trends in food supply and food suppliers' behaviour		Increase of fast-food outlets and mobile food delivery High Pricing of fresh food vs low(er) pricing of processed food	Cheap pricing of snacks/processed foods for both urban rural dwellers	Food companies advertising widely, promote unhealth food; No law to regulate advertisements Agriculture sector should receive more attention (crop/livestock/fisheries).	

Barriers/Constraints*

	Country				
	Bolivia	Egypt	Nigeria	Zambia	Indonesia
Trends in lifestyle	Technologies and lifestyles encourage sedentary lifestyle and consumption of ultra-processed foods	Less outlets for physical activity. Gender differences: women less access to physical activity Awareness campaigns for NCD are needed; rates are high.	Easy access to processed foods and lack of nutritional education; Changing consumption patterns (sugar, fats, processed foods) SBCC efforts are limited because nutrition efforts are already low	'Obesogenic' food environments on the rise, food courts e.g. Few possibilities for physical activity	Easy access to processed foods; Changing consumption patterns (sugar, fats, processed foods); large groups sedentary behaviours
Lack of information and data availability	lack of gender and rural-urban disaggregated information	Problems are interrelated: stunting, obesity, anaemia (double/triple burden) but can be tackled together. Obesity is not a problem by itself – it is accompanied by NCD.	Need to strengthen/develop research agenda to generate more data and better understanding	Absence of comprehensive data; evidence for women and children only. Groups are left out (men, youth, adolescents, elderly). Identify overweight enablers and barriers and entry points for action. Lack of evidence on proven interventions	Programmes and policies targeting overweight and obesity relatively new and coverage is low. So, limited evidence on the impact of interventions; monitoring and evaluation generally poor
Cultural beliefs and habits	Culture, idiosyncrasy of the population	Current food habits need to change. Education for behavioural change is needed. What needs to be put on the plate, daily physical activity needs to be promoted.	Fat babies are considered healthy babies. So they are being fed junk food. Thinness associated with HIV/AIDS, and poverty	Cultural perceptions of body shape, traditional notions about being thin or not.	Diversity in cultural beliefs and habits across the archipelago hampers large scale implementation of the national FNS guidelines. It needs tailoring to the different areas, including the communication media used
Lack of resources	Lack of nutrition professionals to support actions in health institutions and other institutions	Finance/resource mobilisation for interventions is a challenge, to get started but also sustain and scale up successful initiatives Most nutrition interventions delivered through the health system. Strengthening this system is fundamental to the success of any nutrition scale-up plan	Poverty is limiting access to healthy foods	NCDs are mentioned, but no action proposed because the extent of the problem is unknown, making resource allocation problematic	

*Based on document review and stakeholder consultations.

Appendix 6 Stakeholder mapping across five countries

Stakeholder	(Potential) role	In partnership with
Government		
Ministry of Agriculture*	<p>Responsible for the policies relating to the Agricultural Sector and Food and nutrition security strategies.</p> <p>Role is to support nutrition sensitive agriculture and advocate a food-based approach, diversify household food production and promote consumption of micronutrient-rich foods, implementation of food based dietary guidelines.</p> <p>Requires (more explicit) shift from focus on undernutrition to integrated approaches for triple burden of malnutrition, e.g. in food safety, food labelling processing & preservation</p>	<p>MoH MoE MoL Agency/Bureau of food standards MinoC&I (i)NGOs Food Processors FAO IFAD</p>
Ministry of Health*	<p>Responsible for health policies, including the prevention and control of NCDs</p> <p>Role is: NCD management (prevention and control), capacity building among nutritionists and dieticians; provide adequate health and nutrition promotion intervention approaches at multiple levels; provide for evidence informed food standards and food composition tables</p> <p>Requires support from (community) health and social services to implement the health and nutrition promotion interventions</p>	<p>WHO IFAD UNICEF WFP MinoC&I MoE MoA MoL MoCommDev MoYS MLGH MoHA MoFin/Planning DEC Laboratories Research institutes Pharmacy Regulatory Authority Community Health workers CSOs Faith based organisations Health insurance Private health care</p>
Ministry of Finance/National planning*	<p>Budget responsible for all line ministries.</p> <p>Role: coordination of the multi-sectoral effort in food and nutrition and ensuring that sectoral plans align with the National Policies on Food and Nutrition and related domains. In some countries direct involvement in the UN food systems summit dialogue.</p> <p>Requires (more explicit) shift from focus on undernutrition to integrated approaches for triple burden of malnutrition</p>	<p>All line ministries International organisations and donors</p>
Ministry of Women's Affairs*/gender & child protection/women's empowerment and child protection	<p>Goes under different names in the various countries.</p> <p>Responsible for policies and strategies on women's' empowerment, inclusion, often in combination with child protection</p> <p>Role: existing structures for women's' engagement that can be leveraged to create greater awareness on overweight and obesity.</p> <p>Requires (more explicit) shift from focus on undernutrition to integrated approaches for triple burden of malnutrition</p>	<p>MoH MoCommDev MoSocAffairs Community (Health) workers CSOs Faith based organisations</p>
Office of the vice-president	<p>In Nigeria Chair of the National (Food) Nutrition Council, involved in the Food Systems Summit; In Egypt and Indonesia involved in national health campaigns</p>	<p>All line ministries International organisations and donors</p>

Stakeholder	(Potential) role	In partnership with
Government		
Consumer protection agency	Role: safeguarding and advancing the interests and well-being of consumers through regulatory tools to monitor and modify behaviour of service providers and manufacturers, including complaint resolution, surveillance and enforcement, consumer education, as well as research and strategising.	Consumer and civil society organisations Agency/Bureau of food standards
	Requires (more explicit) focus on triple burden of malnutrition	
Agency/Bureau of food (safety) standards	Responsible for regulatory framework for food industry and businesses to comply to standards and regulations. Requires (more explicit) focus on triple burden of malnutrition, and the behaviour of food suppliers.	MoA MoH MoL MoFon/Plan
National Nutrition Institutes/ National food and nutrition council	Units under the Ministry of Health. Responsible for translating policy into national implementation strategies across different ministries and ensure feasibility of interventions. Role: > undertake comprehensive research on all types of malnutrition (determinants triple burden, food consumption, impact assessment of interventions); > build capacity of frontline workers, clinics, and policy-level staff on overweight and obesity, and strengthen screening practices; > Provide guidance to implementing policies in partnership with all key line ministries, and ensure integrated strategies; > Guidelines/protocols for management of nutritional diseases for school children (under/overnutrition) > Activate baby-friendly hospitals to promote breastfeeding	MoA MoH MoE MoL MinoC&I Research institutes Food Processors SUN Other platforms CSOs
	Requires: ongoing emphasis on triple burden of malnutrition, need to assess and address gaps in information	
International organisations and donors		
FAO	Role: Support in-country policy development on agriculture and rural development aiming at food and nutrition security and dietary diversity. Is involved in the UN FSS pathways networks for food system transformation Has no explicit focus on overweight and obesity.	MoA /Rural dept MoL MoFin/Plan MoH Food processors Agency/Bureau of food (safety) standards International organisations and donors
	Requires (more explicit) shift from focus on undernutrition to integrated approaches for triple burden of malnutrition	
IFAD	Role: Support in-country policy development and provides investments in nutrition sensitive strategies for rural development, aiming at improved livelihoods, food and nutrition security and dietary diversity. At country level, no explicit focus on overweight and obesity, but is currently looking to make a focus on the triple burden of malnutrition more explicit.	MoA /Rural dept MoL MoFin/Plan MoH Other line ministries Food processors Agency/Bureau of food (safety) standards International organisations and donors
	Requires: ongoing emphasis on triple burden of malnutrition, need to assess and address gaps in information	
WFP	Role: support country strategies on food security and nutrition. Main objective is promotion of nutritious food to address undernutrition, targeting < 5 children and women of reproductive age. > Support strategies to fill the nutrient gap > Support strategies on food and nutrition security (cash transfer) > Coordination of Sun Business Network	GAIN MoA /Rural dept MoL MoC&I Private sector Food processors Agency/Bureau of food (safety) standards International organisations and donors
	Requires shift from focus on undernutrition to integrated approaches for triple burden of malnutrition	

Stakeholder	(Potential) role	In partnership with
Government		
WHO	<p>Responsible for global action plan, guidelines and frameworks on prevention and control of NCDs and regional action plan on obesity (Americas)</p> <p>Role: Support in-country policy development on NCDs and nutrition</p> <p>Requires better engagement with the food and nutrition sectors to arrive at integrated approaches for triple burden of malnutrition</p>	<p>MoH MoE UNICEF Nat. Nutrition institutes International organisations and donors</p>
UNICEF	<p>Role: Lifecycle approach: 1) Protection/promotion of breastfeeding and enforcement of code of marketing for substitutes. UNICEF Indonesia first UNICEF action plan on overweight and obesity</p> <p>Requires: more emphasis across UNICEF on triple burden of malnutrition, need to assess and address gaps in information</p>	<p>MoH MoE MinSoc Affairs WHO Nat. Nutrition institutes International organisations and donors</p>
UN Network	<p>led by UNICEF, WHO, WFP, FAO and others.</p> <p>Role: convening issue specific networks, led by permanent secretaries from government (MoH/MoA), to develop their own action plans for strategic interventions</p> <p>Requires shift from focus on undernutrition to integrated approaches for triple burden of malnutrition</p>	<p>MoA MoH National Nutrition Coordinating Committee (National/subnational) International organisations and donors</p>
Academia		
Academic/research institutes	<p>Role: address the knowledge gaps, generate necessary data, and support building an evidence base for effective interventions.</p> <ul style="list-style-type: none"> > Develop proposals for securing research grants on triple burden, overweight and obesity, and on physical > Implement overweight and obesity intervention research > Develop and standardise nutrition and physical activity research instruments > Develop adequate curricula for training and education of students on overweight, obesity management and on physical activity > Disseminate information through publications in journal, conference, webinar and seminar presentations. > Engage in community-based health and nutrition promotion programmes at the national, and subnational levels <p>Requires development of a research agenda on the triple burden of malnutrition</p>	<p>MoH MoA International organisations and donors</p>
Civil society		
Civil Society Organisations	<p>Role: act as implementing partners for UN and government agencies.</p> <ul style="list-style-type: none"> > Implement awareness raising (media) campaigns about healthy diets > Articulate projects with government to encourage nutrition sensitive production, with impact for small producers, women and indigenous populations. > Ensure Community participation in interventions and programmes. <p>Requires shift from focus on undernutrition to integrated approaches for triple burden of malnutrition</p>	<p>(Local) Government agencies UNICEF WFP FAO Communities</p>

Stakeholder	(Potential) role	In partnership with
Government		
SUN Civil Society Alliances (SUN-CSA)	<p>Networks of civil society actors, led by secretariat</p> <p>Role: have potential to integrate activities on overweight and obesity in their programmes.</p> <ul style="list-style-type: none"> > Create awareness on issues of overweight and obesity through high level advocacy, communication and social mobilisation targeting policy makers, development partners, industries, NGOs and the general public > Collaborate with relevant Government Agencies, development Partners as technical consultants in planning, implementation, monitoring and evaluation of programmes for improving and addressing issues of overweight and obesity > Develop proposals for nutrition programs and interventions > Facilitate dissemination of nutrition relevant policy documents and guidelines to organisations/institutions on overweight and obesity > Engage media professionals on reporting nutrition issues such as overweight and obesity > Develop and promote Social Behavioural Change Communication (SBCC) materials on adequate nutrition and physical activity <p>Requires shift from focus on undernutrition to integrated approaches for triple burden of malnutrition</p>	<p>Government agencies</p> <p>(i)NGOs</p> <p>GAIN</p> <p>CSOs</p> <p>media</p>
Faith-based organisations	<p>Role: act as implementing partners and can integrate overweight and obesity in their programmes.</p> <ul style="list-style-type: none"> > Implement awareness raising (media) campaigns about healthy diets > Ensure Community participation in interventions and programmes. > Provide affordable health/nutrition services to the general public, including prevention, treatment and care <p>Requires shift from focus on undernutrition to integrated approaches for triple burden of malnutrition</p>	<p>(Local) Government agencies</p> <p>UNICEF</p> <p>WFP</p> <p>Communities</p>
Media	<p>Role: Creating awareness on the overweight/obesity, discourage advertisements of soft drinks and fast foods.</p> <ul style="list-style-type: none"> > Engage media professionals on reporting nutrition issues such as overweight and obesity > Support media campaigns as part of Social Behavioural Change Communication (SBCC) on adequate nutrition and physical activity <p>Requires shift from focus on undernutrition to integrated approaches for triple burden of malnutrition</p>	<p>(Local) Government agencies</p> <p>UN agencies</p> <p>SUN CSA</p> <p>Communities</p>
Nutrition Association/Society	<p>Network of professionals equipped to contribute to shifting the attention to overweight & obesity.</p> <ul style="list-style-type: none"> > Develop a comprehensive advocacy/communication strategy > Collaborate with other stakeholders to assess determinants; > Contribute to capacity building. <p>Requires capacity building to make the shift towards integrated approaches for triple burden of malnutrition</p>	<p>National Nutrition Institutes/ National food and nutrition council</p> <p>SUN CSA</p> <p>MoH</p> <p>MoA</p> <p>MoL</p>
Private sector		
SUN Business Network	<p>Role: engage private sector actors for improved nutrition</p> <p>Requires shift from focus on undernutrition to integrated approaches for triple burden of malnutrition. Focus needed on sensitising the private sector to apply responsible practices regarding advertisements and health claims</p>	<p>GAIN</p> <p>WFP</p> <p>MoH</p> <p>MoC&I</p>

Stakeholder	(Potential) role	In partnership with
Government		
Food manufacturers/processors	<p>Role: Comply to existing legislation and regulations for food processing (limiting use of unhealthy ingredients) and food labelling and adopt responsible practices marketing and advertisement. E.g. involvement of soft drink manufacturing companies in the National Action on Sugar Reduction Coalition</p> <p>Requires shift to triple burden of malnutrition with particular focus on sensitising the private sector to apply responsible practices regarding advertisements and health claims</p>	<p>WFP SUN Business Network MoC&I MoH Agency/Bureau of food (safety) standards Retailers</p>
Food vendors/caterers	<p>Role: Provide healthier setting-based food options and support the creation of health food environments</p> <p>Requires shift to triple burden of malnutrition with particular focus on sensitising the food vendors to provide healthy diets of fresh foods and reduce use of salt, sugar and fat.</p>	<p>MoC&I MoH Agency/Bureau of food (safety) standards Communities</p>

*In Nigeria, this concerns the federal ministries.



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Wageningen Centre for Development Innovation supports value creation by strengthening capacities for sustainable development. As the international expertise and capacity building institute of Wageningen University & Research we bring knowledge into action, with the aim to explore the potential of nature to improve the quality of life. With approximately 30 locations, 7,200 members (6,400 fte) of staff and 13,200 students, Wageningen University & Research is a world leader in its domain. An integral way of working, and cooperation between the exact sciences and the technological and social disciplines are key to its approach.

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