



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 7: Minimum dietary diversity for women of reproductive age

MUFPP framework of actions' category: Sustainable diets and nutrition

This is an indicator to assess dietary quality at individual level, specifically looking at women of reproductive age (MDD-W). It is a proxy for the probability of micronutrient adequacy of women's diets.

Overview table

MUFPP Work stream	Sustainable diets and nutrition
MUFPP action	Promote sustainable diets (healthy, safe, culturally appropriate, environmentally friendly and rights-based) through relevant education, health promotion and communication programmes, with special attention to schools, care centres, markets and the media.
What the indicator measures	This is an indicator to assess dietary quality at individual level, specifically looking at women of reproductive age (MDD-W). It is a proxy for the probability of micronutrient adequacy of women's diets. The indicator reflects micronutrient adequacy, which is one critical dimension of diet. It does not reflect adequacy of specific target nutrients.
Which variables need to be measured / what data are needed	Foods and beverages consumed during a period of 24 hours
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Number of food groups consumed
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	Women of reproductive age (15-49 years)

	Note: If desired also a MDD-YC focussing on young children age 6-23 months can be measured ¹ .
Possible sources of information of such data	Household surveys
Possible methods/tools for data-collection	Household survey (individual interview within household). While food group diversity indicators can be derived from detailed quantitative dietary intake surveys, this guide is intended for users who are not in a position to conduct such surveys. When relatively simple data collection approaches are required, as in a number of large-scale and multi-module surveys, food group diversity indicators can be measured using two main methods: open recall and list-based.
Expertise required	Survey data collection and analysis. It should be clear that a certain level of academic training is needed. Ideally the city would partner with a research institution/university.
Resources required/estimated costs	Specialised knowledge of survey methodology, sampling design and statistical analysis.
Specific observations	<p>This indicator has been validated as an indicator of likelihood of micronutrient adequacy among women of reproductive age. There is a recent global consensus on this indicator as the best, most valid measure of women's dietary diversity; it replaces the WDDS (Women's Dietary Diversity Score) that had been previously developed by FAO and Food And Nutrition Technical Assistance project (FANTA). Unlike former measurements, it offers a threshold for women's micronutrient needs. Consortium of International Agricultural Research Centres (CGIAR) and USAID Feed the Future have mainstreamed the use of this indicator in their evaluations.</p> <p>The MDD-W is validated and relatively easy to administer, but it does not capture dietary quality completely because it is an indicator of micronutrient adequacy and diversity, but does not deal with specific healthy or unhealthy amounts or components of the diet. Other dietary quality scores have been constructed (e.g. the Healthy Eating Index, Dietary Quality Index), but these require a full quantitative –and more costly– 24-hr recall.</p>
Examples of application	There are as yet no known examples of application of this indicator at city level.

Rationale/evidence

Consumption of sufficient, safe, and nutritious food is critical to the health and well-being of any urban household/individual. The Milan Pact Monitoring Framework proposes a set of indicators to measure different aspects of food security and sustainable diets and nutrition. The combination of these indicators provides the more comprehensive analysis. For example Indicator 18 (*Percentage of food insecure households based on the Food Insecurity Experience Scale -FIES*) gives insight into food access at household or individual level. Indicator 9 (*Costs of a nutritious food basket*) looks at the food environment in markets to assess affordability and accessibility of foods by relating the cost of the food basket to individual/family incomes.

This indicator Minimum Dietary Diversity for Women of reproductive age (MDD-W) responds to a long-standing need to have a simple and effective indicator to assess women's diet quality. Women are a group that is often nutritionally vulnerable because of their increased requirements in micronutrients and because, in some settings, they may be disadvantaged in intra-household distribution of nutrient-

¹ See further: <http://www.fao.org/3/a-i6275e.pdf>. Page 16 as well as:

IYCF MDD = Minimum Dietary Diversity indicator, as an indicator of infant and young child feeding practices; see: Indicators for assessing infant and young child feeding practices (WHO, 200811 and WHO, 2010).

http://www.who.int/maternal_child_adolescent/documents/9789241596664/en/.

dense foods. Nutrition-sensitive interventions have intensified in recent years due to an increased focus on deploying efforts towards good nutrition for women and children during the critical 1,000-day period of their life. The MDD-W offers one way to measure impact of these nutrition-sensitive efforts. The MDD-W is a brief set of questions, requiring much less time and expense than traditional dietary surveys. It is validated as an indicator of nutrient adequacy. Moreover, it can provide information about dietary patterns and what are the food groups predominantly consumed at population level (or missing from the diet) and in a given agro-ecological zone. For example, indicators can be derived for consumption of vitamin A-rich plants, and for consumption of iron-rich food groups. This information, if properly accessed and incorporated to inform decision making, can provide sound evidence to influence policies and investment choices towards more nutrition-sensitive agriculture production or other nutrition interventions. It is important to note that MDD-W does not provide comprehensive information on diet quality or all impacts of agriculture on diet. It may not capture changes when projects aim to increase production and consumption of food items or food groups already widely consumed. Likewise, it will not reflect increase in nutrient intake due to consumption of fortified or bio-fortified foods. These projects can have a positive impact on nutrition but need other metrics. Also, it does not measure consumption of unhealthy foods such as ultra-processed snacks and sugar-sweetened beverages, which negatively affect diet quality and non-communicable disease risk in many settings. MDD-W is a powerful tool to track progress and raise awareness on gender specific needs and it fosters the message of the important link between food production (agriculture) and individual consumption (nutrition).

MDD-W is a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality.

MDD-W is thus a population-level indicator based on a recall period of a single day and night, so although data are collected from individual women, the indicator cannot be used to describe diet quality for an individual woman. This is because of normal day-to-day variability in individual intakes.

This indicator will be useful when programme design, activities and impact pathway indicate a potential to increase food group diversity. Note that many agricultural and health sector projects may improve nutrition, but only some will do so by increasing food group diversity. In many contexts, it will also be important to increase the quantity of nutrient-dense food groups that are accessible and consumed by target groups. Users should note that consumption of food items from five or more food groups, while useful as a population-level benchmark, does not ensure micronutrient adequacy for the population, particularly if quantities of micronutrient-dense foods consumed are too small.

Note that cities may be interested in monitoring specific food intake, rather than or in addition to food group diversity. A specific indicator on meat consumption (Indicator 10) is therefore proposed as part of the overall Milan Urban Food Policy Pact monitoring. Other cities are principally interested in fresh fruit and vegetable consumption, given that eating fruits and vegetables can lower risks of heart disease and some cancers. For example, New York City's goal, established in OneNYC in April 2015, is to increase the average number of servings of fruits and vegetables adult New Yorkers eat every day by 25 percent over the next twenty years. Monitoring is done by means of a computer-assisted telephone Community Health Survey². The survey includes a question about "Fruit and vegetable

² You can learn more about the survey and its methodology here: <https://www1.nyc.gov/site/doh/data/data-sets/community-health-survey-methodology.page>. You can download the dataset for public use, here: <https://www1.nyc.gov/site/doh/data/data-sets/community-health-survey-public-use-data.page>. And you can use the online query system to pull up data about fruit and vegetable consumption here: <https://a816-healthpsi.nyc.gov/epiquery/CHS/CHSXIndex.html>

consumption: How many total servings of fruit and/or vegetables did you eat yesterday? (A serving would equal one medium apple, a handful of broccoli, or a cup of carrots)”. A large number of New Yorkers is surveyed and it is designed to be a representative sample of the city as a whole. The question is self-reported and while servings are defined, it is acknowledged that there is variation in interpretation and responses on that question. Although it is self-reported, this results in quantitative analysis of data on the number of servings of fruit and vegetables consumed that can be used to determine the average citywide as well as disparities in age, neighbourhood, and population. Cities can easily include such a question in a MDD-W food consumption diversity survey.

Glossary/concepts/definitions used

Dietary diversity is universally recognised as a key component of healthy diets. It relates to nutrient adequacy (coverage of basic needs in terms of macro and micro nutrients) and to diet variety/balance, which are two of the main components of diet quality.

Women of reproductive age (WRA) include women age 15-49 years of age. WRA are often nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Requirements for most nutrients are higher for pregnant and lactating women than for adult men. Outside of pregnancy and lactation, other than for iron, requirements for WRA may be similar to or lower than those of adult men, but because women may be smaller and eat less (fewer calories), they require a more nutrient-dense diet. Insufficient nutrient intakes before and during pregnancy and lactation can affect both women and their infants.

Food group diversity refers to the diversity of consumption. For this purpose, food items are grouped under overall food groups. The ten used food groups are: 1. Grains, white roots and tubers, and plantains 2. Pulses (beans, peas and lentils) 3. Nuts and seeds 4. Dairy 5. Meat, poultry and fish 6. Eggs 7. Dark green leafy vegetables 8. Other vitamin A-rich fruits and vegetables 9. Other vegetables 10. Other fruits³.

Preparations

A meeting should be organised with all staff who will be involved in this activity to:

- Familiarise them with the methodological guidelines
- Agree on the objectives and scope of the analysis and data collection requirements
- Decide on the data collection method, agree on frequency and period of data collection
- Draft a list of food groups and adapt model questionnaires to local contexts
- Train enumerators
- Field test and modify the questionnaire where needed.
- Coordinate activities.

Sampling

There are numerous sampling, sample size and survey design decisions that depend on the objectives and context for data collection. There are a few decisions specific to measurement of food group diversity for women of reproductive age (WRA), including selection of respondent(s) within the household, sampling of days of the week, sampling of “unusual” days (e.g. feasts) and issues related to seasonality that are described in the Minimum Dietary Diversity for Women: A Guide to measurement. (FAO/Family Health International (FHI) 360, 2016), Appendix 1. <http://www.fao.org/3/a-i5486e.pdf>.

³ The food groups are further described and defined in <http://www.fao.org/3/a-i5486e.pdf>, Section 2, and Appendix 2

With regards to the total number of households to survey, in general a 10% sample (10% of all households) will provide reliable data. A specific policy priority, surveys could be implemented among specific target groups (e.g. lower-income households; women producers vs. non-producers) or in specific areas of the city.

Data Collection

Data are collected on the foods and beverages consumed in the previous 24 hours which are aggregated into 10 distinct food groups. Does not require information on **quantitative** food intake (amounts eaten per day).

Data can be collected through (1) The open recall method or (2) The list-based method.

Open recall method. In a qualitative open 24-hour recall (henceforth, “open recall”), the enumerator asks a series of standard probing questions to help the respondent recall all foods and beverages consumed the previous day and night and also probes for main ingredients in mixed dishes. Specifically, the recall period covers from when the respondent awoke the previous day, through the day and night for a 24-hour period. The recall is “open” because the enumerator does not read predefined foods/groups to the respondent. Each food or beverage that the respondent mentions can be circled, underlined or ticked on a predefined list. Foods not already included on the predefined list can be either classified by the enumerator into an existing predefined food group or recorded in a separate place on the questionnaire and coded later into one of the predefined food groups. This method is recommended and is detailed in Minimum Dietary Diversity for Women: A Guide to measurement. (FAO/Family Health International (FHI) 360, 2016), Section 3 (model questionnaire), <http://www.fao.org/3/a-i5486e.pdf>.

List-based method. In the list-based method, the enumerator does read a list of foods and beverages to the respondent. The enumerator informs respondents that they should respond “yes” for each food or beverage consumed during the specified recall period of the previous day and night. The enumerator continues by reading a list of foods organised in groups, giving multiple examples for each food group. There is anecdotal evidence that data collected with this method are less complete. An example questionnaire and more details are given in Appendix 3 of the Minimum Dietary Diversity for Women: A Guide to measurement. (FAO/Family Health International (FHI) 360, 2016), <http://www.fao.org/3/a-i5486e.pdf>.

There are advantages and disadvantages to each method as detailed in the mentioned Guide to measurement. This guide describes and recommends the open recall because it may lead to more accurate and complete recall of all foods and beverages consumed. Of key concern are the linked issues of respondent burden and the time needed (and thus cost) to implement the recall. There is no universal answer regarding which method is quicker, because it depends on the simplicity or complexity of the woman’s diet, on the length of the food group list and on the number of examples needed for each food group on a list-based questionnaire. When diets are simple, the open recall is likely to be the quicker of the two.

The Guide to measurement provides two elements that comprise the MDD-W questionnaire. The first element is a block of standard text (a “script”) to adapt and use in guiding the respondent through an open recall of foods and beverages consumed the previous day and night. The text also includes statements to guide the enumerator in recording information. The second element is a model questionnaire form, which needs to be adapted with local foods (see Section 4 for guidance on translation and adaptation of the text and questionnaire). Guidance notes on enumerator training and how to field test the methodology are also provided.

Data Analysis and Disaggregation

Women who consume foods from at least 5 out of 10 food groups have a higher likelihood of micronutrient adequacy. Several indicators can be derived from the basic data, including (i) proportion of women who consume 5 or more food groups out of ten; (ii) mean dietary diversity score; (iii) proportion of women consuming any specific food group such as animal source foods.

The referenced Guidelines also outline a standardised methodology for data analysis. Presentation can be as simple as the percent of WRA achieving MDD-W or “minimum dietary diversity”. The indicator was developed for exactly this purpose, i.e. when a single, simple, dichotomous indicator is needed. The interpretation of the indicator is: “X% of women achieved minimum dietary diversity, and they are more likely to have higher (more adequate) micronutrient intakes than the X% of women who did not”.

In some cases, it may be useful to present results separately by selected geographic, socioeconomic or household characteristics (e.g. by different areas in the city, by wealth quintile or by level of education), but decisions on appropriate disaggregation will be survey- and context-specific and will depend on objectives, sampling and sample sizes. While designed to meet the need for a single, simple indicator, the data collected to construct the indicator also provide a rich description of diet patterns. The information may also reflect specific food groups of interest in particular contexts (e.g. animal-source foods, fruits and vegetables, nutrient-poor and/or energy-dense groups and other specific food groups promoted in interventions).

References and links to reports/tools

Martin-Prevel Y., M. Arimond, P. Allemand, D. Wiesmann, T. J Ballard, M. Deitchler, M.C. Dop, G. Kennedy, A. Lartey, W. TK Lee, and M. Moursi (2017) on behalf of the Women’s Dietary Diversity Project (WDDP). Study Development of a Dichotomous Indicator for Population-Level Assessment of Dietary Diversity in Women of Reproductive Age. *Curr Dev Nutr* 2017. Available from <http://cdn.nutrition.org/content/asnaoa/1/12/cdn.117.001701.full.pdf>.

UN-FAO, 2016. Compendium for nutrition sensitive agriculture. <http://www.fao.org/3/a-i6275e.pdf>

UN-FAO, 2016. Minimum Dietary Diversity for Women: A Guide to measurement. (FAO/Family Health International (FHI) 360, 2016). <http://www.fao.org/3/a-i5486e.pdf>



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 8: Number of households living in “food deserts”

MUFPP framework of actions' category: Sustainable diets and nutrition

The indicator measures the geospatial distribution of the food retail establishments and of socioeconomic population groups to analyse the number (or percentage) of households living at a certain distance from food markets.

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	Promote sustainable diets (healthy, safe, culturally appropriate, environmentally friendly and rights-based) through relevant education, health promotion and communication programmes, with special attention to schools, care centres, markets and the media.
What the indicator measures	Number of households living in “food deserts”
Which variables need to be measured / what data are needed	<ul style="list-style-type: none"> Types of food retail establishments (supermarket, convenience store, etc.) Socioeconomic variables of population
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Number/percentage of households, km or miles to supermarket
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	If desired: disaggregate information for specific household categories (e.g. socio-economic wealth classes or areas in the city)
Possible sources of information of such data	<ul style="list-style-type: none"> Public health authority inspection data Planning department business census Business licensing department records
Possible methods/tools for data-collection	<ul style="list-style-type: none"> -Analysis of existing datasets -Design and implementation of retail environment surveys
Expertise required	<ul style="list-style-type: none"> -GIS mapping, -Collecting data through product inventories/ surveys
Resources required/ estimated costs	Experienced GIS analyst

Specific observations	Cities in developed countries are more likely to have existing regulatory datasets on the types and location of food retail establishments. They cities are also likely to have very few informal, unlicensed retail outlets. In other cities, there can be a high number of informal shops which can be a very significant food source for many lower income residents. Traditional regulatory data sources will not capture these markets. Primary data collection will have to be done to take into account the characteristics of these informal markets and build a comprehensive picture of the city's food retail environments.
Examples of application	<p>The Toronto Public Health Department led an analysis of the city's food retail environments in 2014 to assess the variation in the quality and quantity of food outlets in Toronto. The analyses were based on Toronto's public health inspection system database. The results showed that Toronto has very few "food deserts" defined as lower income areas with no supermarket within 1km walking distance. The research also looked at the availability of healthier vs less healthy food products geographically. Across Toronto there is also an overabundance of less healthy food options. According to an analysis of the modified food retail environment index (MFREI) which calculates the ratio of healthier to less healthy food store locations within a 1km walking distance from each city block on average there are four less healthy food stores for every healthier food retail outlet. Healthier food retail was defined as a supermarket, butcher shop, fish shop, bakery (some), or any smaller food store that sells a significant quantity of fresh produce. By this definition, about one third of all food stores in Toronto are considered healthier food retail. There was no significant correlation between neighbourhood income and index score. However, there are several areas of Toronto where low income and a low MFREI score overlap. In these areas, there are a high number of lower income households and the food environment within which they choose to spend their limited resources near home is dominated by stores that sell unhealthy food¹.</p> <p>Since 2012, the Johns Hopkins Center for a Livable Future (CLF) and the Baltimore Food Policy Initiative (BFPI) have collaborated to examine the physical food environment in Baltimore City to identify gaps and opportunities in healthy food access. A 2018 report builds upon the 2015 report: Mapping Baltimore City's Food Environment by providing an update on the Baltimore City food retail environment, including an in-depth analysis that identifies geographic areas that should be prioritised for healthy food policy and programmatic activities, and strategies and opportunities to address healthy food access. In addition, this report specifically highlights various elements of the physical food environment, from retail outlets to urban agriculture to nutrition assistance, to provide a more focused look at each component².</p>

Rationale/evidence

The subject of food retail environments is increasing in popularity among both researchers and policy makers. Food deserts have received a significant amount of attention because of possible connections with dietary behaviours, food purchasing, weight status, or diet-related disease outcomes. Typically, they are described as residential areas, often in cities, where low-income residents have limited or no geographic access to affordable food retail establishments offering a range of healthy food options. Long distances to supermarkets is exacerbated when residents lack the financial resources to own a car, have insufficient access to public transit or are socially isolated with few friends or family to rely on.

¹ Toronto Public Health. Toronto Food Strategy: 2015 Update. June 2015.

² <https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/pdf/projects/bal-city-food-env/baltimore-food-environment-digital.pdf>

There is no consensus on a definition of “food deserts”. Some authors question the usefulness of the food desert construct, arguing that it obscures the core issue of inadequate income, regardless of one’s proximity to a supermarket. This variation in definition and approach creates inconsistency and ambiguity in the validity of their results, providing outcomes that can lead to differing or even contradictory opinions about the extent of the food desert problem and its actual location³.

Baltimore (USA) recently renamed “food desert” areas of Baltimore where residents don’t have ready access to healthy, affordable food to be now known as “*healthy food priority areas*.” According to Mayor Catherine Pugh the new term is more accurate. ‘Deserts’ implies there is no food, when actually there is an imbalance between healthy and unhealthy foods. A new study released by the city and researchers at the Johns Hopkins University concluded that 146,077 city residents live in such areas — 23.5 percent of the population. A total of 124,521 of them are African-American. To be deemed a priority area, a neighbourhood must rank poorly in a measure of food store quality, have a low median income, have more than 30 percent of households without cars, and be more than a quarter-mile from a supermarket⁴.

To date, the presence and characteristics of food deserts have been studied primarily in urban settings including Australia, the UK, the United States and Canada. Results of research on food deserts are equivocal. Beaulac et al. (2009) found that clear disparities in food access exist by income and race in many cities in the U.S., but not elsewhere⁵. Food deserts have been identified in cities in Australia and the UK. However, in the latter, the establishment of a supermarket did not alter residents’ diets.

Lytle et al. (2017) reviewed food environment studies and found that geographic analysis (65% of studies reviewed) was the most common method. However, only one in four studies reported the reliability of measures⁶. A challenge with many food desert studies is that their complex methods and detailed inputs, often requiring significant primary data collection, may make them difficult and expensive to replicate. Given the dynamic nature of the contemporary foodscape, where retailers routinely leave or enter a community, it is critical to be able to update food desert analyses regularly so they are current and relevant; complex, resource-intensive methods may make this challenging to do in a timely fashion⁷.

Despite the contested nature of food deserts, and the lack of consensus on the appropriate methods to measure and describe them, they nonetheless have become an important concept that facilitates discussion, debate and negotiation within communities, and between communities and policy makers, about how to address food insecurity in the context of modern foodscapes⁸.

Glossary/concepts/definitions used

Food Desert: There is no agreed upon definition of a “food desert”. The USDA defines it as:

“a low-income census tract where either a substantial number or share of residents has low access to a supermarket or large grocery store. “Low income” tracts are defined as those where at least 20 percent of the people have income at or below the federal poverty levels for family size, or

³ D’Acosta, J. (2015). Finding Food Deserts: A Study of food access measures in the Phoenix-Mesa urban area. A Thesis Presented to the Faculty of the USC Graduate School. University of Southern California.

⁴ See footnote 2

⁵ Beaulac, J., Kristjansson, E., & Cummins, S. (2009). Peer reviewed: A systematic review of food deserts, 1966-2007. *Preventing chronic disease*, 6(3).

⁶ Lytle, L. A., & Sokol, R. L. (2017). Measures of the food environment: A systematic review of the field, 2007–2015. *Health & Place*. 44, 18-34.

⁷ Joyce et al. (2017), op. cit.

⁸ Joyce et al. (2017), op. cit.

where median family income for the tract is at or below 80 percent of the surrounding area's median family income. Tracts qualify as "low access" tracts if at least 500 persons or 33 percent of their population live more than a mile from a supermarket or large grocery store (for rural census tracts, the distance is more than 10 miles)⁹."

Food Environment: The food environment includes features of the community, such as the number and kinds of food outlets in people's neighbourhoods (geographic food access). It also features the consumer experience, such as the kinds of foods that are available, affordable, and of good quality¹⁰.

Food Swamp: Lower socio-economic neighbourhoods have high geographic access to food retailers perceived as promoting mainly minimally nutritious food options such as fast food outlets and convenience stores).

Preparations

Local governments may need to link with national government agencies, ministries and research institutes to coordinate data collection and analysis. One option could include an inter-sectoral monitoring team that includes statistical offices, national agencies/ministries and other sector representatives. The responsibility for data collection, analysis and dissemination, as well as reporting, could then fall on the inter-sectoral team. Establishing mechanisms for easy and transparent sharing and validation of data is critical for ensuring a strong link among stakeholders for implementing solutions.

A meeting should be organised with all partners who will be involved in this activity to:

- Agree on the objectives and scope of the analysis and data collection requirements
- Define the methodology to be applied for data collection and analysis, and
- How to coordinate the activities within the team.

Data Collection and Analysis

This section provides an overview of key issues in data collection and analysis. For a more comprehensive guide, please refer to the resources below:

- C. Misiaszek C., S. Buzogany and H. Freishtat (2018). Baltimore's city food environment: 2018 report. Johns Hopkins Center for a Livable Future and the City of Baltimore. Available at: <https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/pdf/projects/bal-city-food-env/baltimore-food-environment-digital.pdf>
- Minaker, L. (2013). Measuring the Food Environment in Canada. Ottawa, Ontario: Health Canada. Available from http://www.foodsecuritynews.com/resource-documents/MeasureFoodEnvironm_EN.pdf.
- USDA Economic Research Service (2017). Food Access Research Atlas: Documentation. Available from <https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation/>.
- Ver Ploeg, M., Dutko, P., & Breneman, V. (2014). Measuring food access and food deserts for policy purposes. *Applied Economic Perspectives and Policy*, 37(2), 205-225. Available from <https://academic.oup.com/aep/article/37/2/205/8641>.
- Centers for Disease Control and Prevention. (2014). Healthier food retail: Beginning the assessment process in your state or community. Atlanta: US Department of Health and Human Services. Available from <https://www.cdc.gov/obesity/downloads/HFRassessment.pdf>.

⁹ USDA (2017). Food Desert Locator. Release No. 0191.11. Available from <https://www.fns.usda.gov/tags/food-desert-locator>.

¹⁰

⁰ Minaker, L. (2013). Measuring the Food Environment in Canada. Ottawa, Ontario: Health Canada.

- Cohen, B. E. (2002). Community food security assessment toolkit (pp. 02-013). Washington, DC: US Department of Agriculture, Economic Research Service. Available from http://www.uc.edu/cdc/urban_database/food_resources/community_food_security_assessment_USDA.pdf.

Researchers have identified four features of the food environment for assessing quality and quantity¹¹.

- || **Geographic food access** refers to the geographic availability of different types of food stores and restaurants. There are various ways to measure geographic access. For example, one can measure the proximity of homes to specific outlet types, such as grocery stores or fast food outlets. Another measure is to count the number of convenience stores or fast food outlets within a given geographic area.
- || **Food availability** refers to the actual foods that are available in someone's neighbourhood. For example, studies examining food availability have looked at whether or not fresh fruits and vegetables are within a certain distance of peoples' homes, or the amount of shelf-space dedicated to energy-dense snack foods in someone's neighbourhood.
- || **Food affordability** refers to the cost of foods within a defined area. It can be measured using an absolute method such as a nutritious food basket.
- || **Food quality** measures subjective assessments of food quality – whether fruits and vegetables appear withered or bruised. Food quality measurement can gauge residents' satisfaction with the quality of foods in their neighbourhoods.

Variables for Disaggregation

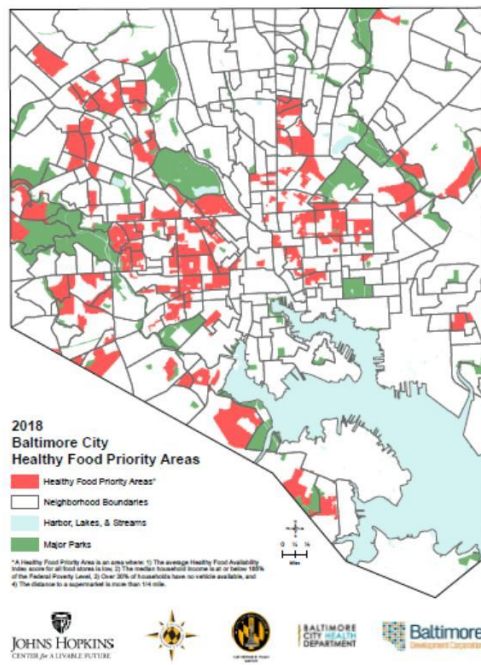
The indicators related to food deserts can be disaggregated by:

- Regional differences
- Socioeconomic variations
- Informal urban settlements
- Locally important marginalised groups.

By disaggregating the data spatially (see the example from Baltimore below¹²) and by different socioeconomic strata, it is possible to identify which parts of the population do not have access to food retail outlets.

¹¹ Minaker, L. (2013). op. cit.

¹² See footnote 2



References and links to reports/tools

C. Misiaszek C., S. Buzogany and H. Freishtat (2018). Baltimore's city food environment: 2018 report. Johns Hopkins Center for a Livable Future and the City of Baltimore. Available at:

<https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/pdf/projects/bal-city-food-env/baltimore-food-environment-digital.pdf>

Beaulac, J., Kristjansson, E., & Cummins, S. (2009). A systematic review of food deserts, 1966-2007. *Preventing chronic disease*, 6(3).

Caspi, C.E., Sorensen, G., Subramanian, S.V. & Kawachi, I. (2012). The Local food environment and diet: A systematic review. *Health Place* 2012; 18:1172–87.

Joyce, S., Stefan, E. K., & Megan, J. (2017). Food deserts in Winnipeg, Canada: a novel method for measuring a complex and contested construct. *Health promotion and chronic disease prevention in Canada: research, policy and practice*, 37(10), 350.

Lytle, L. A., & Sokol, R. L. (2017). Measures of the food environment: A systematic review of the field, 2007–2015. *Health & Place*. 44, 18-34.

Minaker, L. (2013). Measuring the Food Environment in Canada. Ottawa, Ontario: Health Canada. Available from http://www.foodsecuritynews.com/resource-documents/MeasureFoodEnvironm_EN.pdf.

Su, S., Li, Z., Xu, M., Cai, Z., & Weng, M. (2017). A geo-big data approach to intra-urban food deserts: Transit-varying accessibility, social inequalities, and implications for urban planning. *Habitat International*, 64, 22-40.

USDA Economic Research Service (2017). Food Access Research Atlas: Documentation. Available from <https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation/>.

Ver Ploeg, M., Dutko, P., & Breneman, V. (2014). Measuring food access and food deserts for policy purposes. *Applied Economic Perspectives and Policy*, 37(2), 205-225.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 9: Costs of a nutritious food basket at city/community level

MUFPP framework of actions' category: Sustainable diets and nutrition

The indicator measures a medium cost of a diet meeting minimum requirements of macro- and micronutrients or food based dietary guidelines based on a weighted food price index.

Overview table

MUFPP Work stream	Sustainable diets and nutrition
MUFPP action	Promote sustainable diets (healthy, safe, culturally appropriate, environmentally friendly and rights-based) through relevant education, health promotion and communication programmes, with special attention to schools, care centres, markets and the media.
What the indicator measures	The minimum cost of a diet meeting minimum requirements of macro and micronutrients or food based dietary guidelines.
Which variables need to be measured / what data are needed	The following data are needed: -List of main food markets -List of food items to be included in a nutritious food basket -Unit costs/Prices of selected nutritious and healthy foods in local markets -Data on food requirements for specific age/sex groups of reference households
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Average costs of specific food items in local currency unit per person per day
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	Food items that make up a nutritious food basket
Possible sources of information of such data	-Statistics Office, Health Department -Food price monitors -Surveys among different market outlets
Possible methods/tools for data-collection	-Market/price information where they exist -Market surveys
Expertise required	Food costs surveying
Resources required/ estimated costs	

Specific observations	<p>There are in many cities ongoing efforts and data on food basket (consumption) monitoring (Statistics Office, Health Department). Often the price of a basic food basket is tracked, but typically not based on nutritious diets.</p> <p>Also, this indicator looks at food offers in the markets (focus on outlets, rather than on what/how much is consumed). Other consumption focused food security indicators are suggested in addition to this specific indicator.</p>
Examples of application	<p>Every two years, the Provincial Health Services Authority (PHSA) works with the Ministry of Health and the five regional health authorities to monitor the cost of a nutritionally adequate diet in British Columbia, Canada. Data is collected every two years using Health Canada's National Nutritious Food Basket (NNFB) tool, which includes 67 food items that are minimally processed, require preparation, and are considered to be commonly eaten by most Canadians in amounts that provide a nutritionally adequate, balanced diet. Data collection is implemented by the regional health authorities (RHAs) and occurs in the last week of May and the first week of June. A sample of approximately 220 full-service grocery stores were randomly selected and stratified by the health service delivery areas (HSDAs) of the RHAs. Complete data for 196 stores was obtained and used to determine the average cost of the NNFB. The surveillance team at PHSA analysed the data submitted by the RHAs using algorithms and information received from Health Canada. The average cost in each food category is weighted by purchase popularity and the amount of food that each person needs, adjusted by sex and age. Then the total cost was adjusted based on the size of family using the Household Size Adjustment Factor to account for the economies or diseconomies of scale¹.</p> <p>Save the Children, an NGO, piloted an approach "to quantify the extent to which households could afford to feed their children under the age of 2 and a whole family of 5 people, with a diet meeting minimum requirements of macro and micronutrients." The cost of the cheapest adequate diet was based on household surveys and calculated using a linear programming tool and a spreadsheet model built in Microsoft Excel 2000.²</p> <p>Note that several cities already collect food price data that are needed for calculating this indicator. For example, the municipality of Curitiba, Brazil, through a programme called Disk Economy collects daily data on the price of food³.</p>

Rationale/evidence

Consumption of sufficient, safe, and nutritious food is critical to the health and well-being of any urban household. One of the food security indicators used is the average monthly cost of a nutritionally adequate, balanced diet, e.g. a **nutritious food basket**. Food costing is used to monitor both affordability and accessibility of foods by relating the cost of the food basket to individual/family incomes. It will help (i) determine the minimum cost of a nutritious food basket (healthy diet), (ii) to determine the affordability of a healthy diet by household type. This indicator may provide direction to a city's health department in regard to fulfilling the requirement of monitoring food affordability and consequently supporting and promoting access to nutritious, safe, personally acceptable foods through policy and programme planning, and by targeting specific priority populations. Note that such

¹ 2015 findings are documented in the following report: <http://www.phsa.ca/population-public-health-site/Documents/2015%20Food%20Costing%20in%20BC%20-%20FINAL.pdf>

² <https://resourcecentre.savethechildren.net/sites/default/files/documents/3841.pdf> (accessed 29-01-2018).

This paper presents the results of piloting a new method for estimating the cost and affordability of the diet in four study locations (villages in Bangladesh, Ethiopia, Myanmar and Tanzania). This method –based on household rather than market surveys- is one of the fewer attempts conducted in the developing world.

³ See: <http://www.curitiba.pr.gov.br/servicos/cidadao/disque-economia/162>

policies and programmes should take into account that decreasing food costs cannot come at the expense of farmers.

The cost of a Nutritious Food Basket, using a list of food items, can be priced to estimate the average cost of feeding –on the basis of a healthy diet- different age (for example children) and sex groups or household compositions (for example a reference family of four including a man and woman, each aged 31–50 years; a boy, 14–18 years of age; and, a girl, 4–8 years old). The basket is designed to reflect an example of an eating pattern that meets local (or international) nutrition and dietary recommendations and eating behaviours of the average urban population. Items in the Nutritious Food Basket reflect the lowest price available in a specified purchase size, regardless of brand. The resulting food basket cost is based on the average cost of each food item from all surveyed market stores.

Glossary/concepts/definitions used

A **Nutritious Food Basket (NFB)** is a survey tool that is a measure of the cost of basic healthy eating that represents current nutrition recommendations and average food purchasing patterns. Current nutrition recommendations or dietary guidelines are available for specific countries based on types and quantities of food that are recommended for different age and sex groups.

Healthy diet: A diet is considered healthy for an individual when it covers both its micro- and macronutrient requirements.

Preparations

A meeting should be organised with all staff who will be involved in this activity to:

- Familiarise them with the methodological guidelines
- Agree on the objectives and scope of the analysis and data collection requirements
- Draft a list of food items to be included in the nutritious food basket
- Train food surveyors
- List and sample market stores/outlets to be surveyed
- Agree on frequency and period of data collection.

The list of food items that make up a nutritious food basket can be taken from available dietary guidelines or obtained from the Ministry of Health.

Food surveyors should understand the entire process of food costing. To ensure they have received a full explanation of their role, food surveyor training should include:

- Reviewing the procedures;
- Providing examples of common problems encountered;
- Practising food costing at a store (if possible); and
- Completing sample calculations.

To be sure the data is collected in the same way, all food surveyors must receive the same instructions and follow the same procedures. It is strongly recommended that food surveyors be trained in-store whenever possible to provide realistic hands-on experience. Training conducted in-house should try to mimic in-store training as closely as possible. When training surveyors, remind them to handle all items with care while costing food (Training Handouts are provided in:

http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/guidance/nutritiousfoodbasket_gr.pdf).

It is strongly advised to run full length trial surveys in order to gauge amount of time needed, review quality of recordings and usability of the resulting data and decide on any adaptations needed.

Sampling

To account for seasonal differences in food offers and food prices, food costing should preferably be done each main production season.

If seasonal (or monthly) is not possible, annual sampling is suggested. Note that in the latter case, data collection is a one-time snapshot event that may not necessarily reflect the average annual cost estimate.

Food costing may focus and be limited to specific areas in the city only, notably lower income areas.

Food prices vary across markets (varying from informal street markets to open markets, supermarkets, grocery stores, neighbourhood shops). It is recommended to purposively sample 10% of each main type of food markets.

To be included in the list of market stores/outlets, the following could be taken into account (adapted from Ministry of Health Promotion Canada, 2010. Nutritious food basket-Guidance Document):

- The market store must offer a major part or full line of products. Any store that does not have the capacity to have the full range of items in the NFB would not qualify (e.g. many convenience stores, drug stores, and department stores would not meet this criterion).
- The final list of markets should include representation from each of the major chains operating in the city/selected area; include both premium and discount stores from any of the major chains above; as well as any independent market stores.
- Exclude stores such as: Warehouse-type stores which may not regularly have food basket items in the specified sizes; Stores that require membership for shopping privileges, because membership is not accessible to the entire population and it is not possible to attribute the membership cost to the food items; and Convenience stores.
- Stores should be representative of the types of stores in which individuals in the city/selected area typically shop. The store selection strategy includes sampling at least one store from each major chain operating within a specific area. Not sampling from a range of stores could skew food prices. The relative importance (i.e. market share) of any store is not a factor in store selection strategy.

Note that when sampling includes high-end “health food” grocery stores, the inclusion of these stores may disproportionately influence food costs. Costs may be calculated, including or excluding such specific stores.

Food costing should be conducted for all major market outlets in the city/neighbourhood. A list of all market outlets (including informal markets and convenience stores) should be drawn up and a random sample made. Review the list of selected stores on an annual basis to consider whether different stores or any new major chains/groups or independents need to be included.

Data Collection

Once stores have been identified, the surveyors should make contact with the stores to request permission and thank them for their cooperation. Note that store managers who have a better understanding of how the information is used are more likely to participate. Send a letter of confirmation timed to arrive about a week prior to survey dates, and take a copy of the letter to the store manager on the day that food costing is completed to help remind the store manager about your communication. Follow up with a letter of thanks after the surveys have been completed. If a store that was selected does not permit to carry out in-store costing, consider if the remaining stores accurately represent the region. If not, store selection will need to be revisited.

Survey selected stores within the set time-period. Complete the costing in any given store in a single visit. Review all food costing forms to ensure purchase units are correct and enter the information into a cost averaging spreadsheet.

Data Analysis and Disaggregation

Ensure that in-store costing forms are complete for each store surveyed. Review prices to ensure they are in a form that can be entered into a cost averaging spreadsheet. The person coordinating the NFB data collection needs to check the following:

- Where the specified purchase unit is not available and prices for alternative-size products have been recorded, the price needs to be calculated for the preferred purchase unit.
- Are prices for fresh produce in a per kilogram format? If not, the price per item should be converted to a per kilogram price.
- For produce priced in multiple formats, has a lowest price per kilogram been calculated?
- Are there missing values? Note: Do not enter anything (including “0”) in the cost averaging spreadsheet for these items where there are missing values (e.g., when a food item is not available). The cost averaging spreadsheet will calculate the average cost of the food item from stores for which there is data. If “0” is entered, the average will include the price of \$0 for the store for which there is no data, lowering the apparent average cost of the food item.
- Food prices from each store must be entered into a cost averaging spreadsheet.
- Calculate the cost of the food basket for specific age/sex groups or reference households.

Costs of a nutritious food basket can be mapped for specific areas/districts in the city or for specific households or population groups (e.g. pregnant women, children). In this way, mapping can focus on low-income areas/neighbourhoods to analyse food costs in relation to average household income levels.

Generally, inflation rate is also not considered when comparing prices over time. Such data analysis limitations should be clearly reported.

More detailed guidelines and reporting formats can be found here:

http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/guidance/nutritiousfoodbasket_gr.pdf

References and links to reports/tools

Ministry of Health Promotion Canada, 2010. Nutritious food basket-Guidance Document.

http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/guidance/nutritiousfoodbasket_gr.pdf

See further: <https://www.canada.ca/en/health-canada/services/food-nutrition/food-nutrition-surveillance/national-nutritious-food-basket.html>

Save the Children The Minimum Cost of A Healthy Diet. Available at:

<https://resourcecentre.savethechildren.net/sites/default/files/documents/3841.pdf> (accessed 29-01-2018) . This paper presents the results of piloting a new method for estimating the cost and affordability of the diet in four study locations (villages in Bangladesh, Ethiopia, Myanmar and Tanzania). This method –based on household rather than market surveys- is one of the fewer attempts conducted in the developing world.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

March 2021 version

Indicator 10: Individual average daily consumption of meat

MUFPP framework of actions' category: Sustainable diets and nutrition

Note this is not a normative indicator on recommended daily intake of meat. It will monitor meat consumption in order to discuss sustainable and healthy diets from a health and environmental perspective.

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	Promote sustainable diets (healthy, safe, culturally appropriate, environmentally friendly and rights-based) through relevant education, health promotion and communication programmes, with special attention to schools, care centres, markets and the media.
What the indicator measures	Individual average daily consumption of meat
Which variables need to be measured / what data are needed	<ul style="list-style-type: none"> Meat categories (ruminants, pork, poultry, fish, etc.) Red meat vs processed meat Socioeconomic variables
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Weight of meat consumption If desired, the following could (also) be measured: Share of expenditures on meat of total food expenditures).
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	Grams of meat per day per capita OR annual kilograms of meat consumption per capita
Possible sources of information of such data	<ul style="list-style-type: none"> Agriculture departments (meat production data) Health departments or academic institutions (household dietary surveys)
Possible methods/tools for data-collection	<ul style="list-style-type: none"> Data analysis from existing reports Household dietary or consumption surveys
Expertise required	Data analysis, survey design and implementation
Resources required/ estimated costs	

Specific observations	The specific categories of animals included in meat consumption can vary, in particular, whether fish are included. FAO defines meat as all animals used for food. However, the OECD includes only beef, veal, pig, poultry and sheep. Aggregate production (carcass mass availability) or retail data are often used as proxies for per capita consumption. The accuracy of production data as a consumption proxy can be limited in countries where the population is small but meat exports are high.
Examples of application	<p>The School of Public Health at the University of São Paulo conducted 24-hour diet recall surveys among residents in 2003 and 2008 to track trends in meat consumption. Data were collected from adolescents, adults and seniors in São Paulo. The daily mean of red and processed meat consumption was 100 g/day in 2003 and 113 g/day in 2008. Excessive red and processed meat consumption was observed in almost 75% of the subjects, especially among adolescents in both surveys. Beef represented the largest proportion of meat consumed, followed by poultry, pork and fish in both surveys¹.</p> <p>The City of Ghent monitor meat consumption through biannual market research with questionnaires sent out to thousands of citizens in Ghent, Flanders, other Belgian cities, etc. This allows them to see the evolution for Ghent and to compare the city to other regions and cities around Ghent. Total costs for their 2016 survey (including Ghent and Brussels areas) were 6 500 Euro.</p>

Rationale/evidence

Meat/animal sourced protein can be part of a balanced diet contributing valuable nutrients that are beneficial to health. Meat and meat products contain important levels of protein, vitamins, minerals and micronutrients which are essential for growth and development. Further processing of meat offers the opportunity to add value, reduce prices, improve food safety and extend the shelf-life. This can result in increased household income and improved nutrition. While the per capita consumption of meat in some industrialised countries is high, per capita consumption below 10 kg in developing countries must be considered insufficient and often leads to undernourishment and malnutrition. It is also estimated that more than 2 billion people in the world are deficient in key vitamins and minerals, particularly vitamin A, iodine, iron and zinc. Deficiencies occur when people have limited access to micronutrient-rich foods such as meat, fish, dairy, fruit and vegetables. These sources are usually combined in the daily food intake, but in regions where not all of them are readily available, intake of the others needs to be increased. It is for these reasons that some cities (like Nairobi, Kenya and Quito, Ecuador promote livestock production and consumption as an important part of their urban agriculture and urban food security programmes).

Although nutrients from animals may be of higher quality or more readily absorbed than vegetable sources, it is possible to have a healthy vegetarian diet. The steadily growing world population and increasing incomes creates higher demand for meat, but at the same time leaves limited space for expansion in livestock production. Therefore the maximum utilisation of existing food resources becomes even more important².

Global meat consumption and production patterns pose a threat to the natural environment by contributing to climate change, resource depletion and the extinction of species. The food system as a whole accounts for an estimated 20-30% of the global greenhouse gas emissions while, within food consumption patterns, meat and dairy products are the main contributors to environmental impacts.

¹ de Carvalho, A. M., César, C. L. G., Fisberg, R. M., & Marchioni, D. M. (2014). Meat consumption in Sao Paulo–Brazil: trend in the last decade. *PloS one*, 9(5), e96667.

² FAO (2014). Animal Production and Health: Meat consumption. Agriculture and Consumer Protection Department. Available from <http://www.fao.org/ag/againfo/themes/en/meat/background.html>.

Among the different types of meat, beef has the largest and chicken the smallest environmental impact in terms of climate change, land use and fossil fuel depletion. Given a growing population and an increase in wealth, the demand for food and meat is predicted to increase by 70% by 2050 for food and by 2030 for meat³. With rapid global urbanisation, it will be important for cities to gauge trends in meat consumption to inform health and environmental strategic plans. It is in this context that this indicator monitors meat consumption as part of environmentally sustainable diets.

Glossary/concepts/definitions used

Meat: The flesh of animals used for food (including beef, poultry, pork, fish and others)⁴.

Preparations

A meeting should be organised with all staff who will be involved in this activity to:

- Familiarise them with meat consumption assessments
- Agree on the objectives and scope of the analysis and data collection requirements
- Define the methodology to be applied for data collection and analysis, and
- How to coordinate the activities.

Data Collection and Analysis

FAO figures for meat consumption are generally based on carcass mass availability (with “carcass mass” for poultry estimated as ready-to-cook mass), divided by population⁵. The amount eaten by humans differs from carcass mass availability because the latter does not account for losses, which include bones, losses in retail and food service or home preparation (including trim and cooking), spoilage and “downstream” waste, and amounts consumed by pets (compare dressed weight)⁶.

For a detailed methodology of population meat consumption data collection and analysis, please refer to the following resources:

FAOSTAT: Food and Agriculture Data. Available from <http://www.fao.org/faostat>.

OECD Data: Meat Consumption. Available from <https://data.oecd.org/agroutput/meat-consumption.htm>.

Cities may also decide to add a question on meat consumption in other sustainable diets and nutrition consumption surveys or design a specific survey on the topic. An example survey used in Ghent is available in Dutch and can be obtained from the city of Ghent⁷.

References and links to reports/tools

FAO (2013). Current Worldwide Annual Meat Consumption per capita, Livestock and Fish Primary Equivalent. Food and Agriculture Organization of the United Nations. Available from <http://www.fao.org/docrep/005/y4252e/y4252e05b.htm>.

³ Van Mierlo, K., Rohmer, S., & Gerdessen, J. C. (2017). A model for composing meat replacers: Reducing the environmental impact of our food consumption pattern while retaining its nutritional value. *Journal of Cleaner Production*, 165, 930-950. <https://www.sciencedirect.com/science/article/pii/S0959652617315330>

⁴ FAO (1994). Definition and Classification of Commodities. Available from <http://www.fao.org/waicent/faoinfo/economic/faodef/fdef17e.htm>.

⁵ FAOSTAT. (Statistical database of the Food and Agriculture Organization of the United Nations. Methods and Standards. http://faostat3.fao.org/mes/methodology_list/E.

⁶ Loss-adjusted food availability documentation. United States Department of Agriculture, Economic Research Service. [http://www.ers.usda.gov/data-products/food-availability-\(per-capita\)-data-system/loss-adjusted-food-availability-documentation.aspx](http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system/loss-adjusted-food-availability-documentation.aspx).

⁷ Please contact: katrien.verbeke@stad.gent

FAO (2014). Animal Production and Health: Meat consumption. Agriculture and Consumer Protection Department. Available from <http://www.fao.org/ag/againfo/themes/en/meat/background.html>.

Gerber, P. J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J. & Tempio, G. (2013). Tackling climate change through livestock. Food & Agriculture Organization.

OECD/FAO (2017), OECD-FAO Agricultural Outlook 2017-2026, OECD Publishing, Paris.
http://dx.doi.org/10.1787/agr_outlook-2017-en

Steinfeld, H., Gerber, P., Wassenaar, T. D., Castel, V., & de Haan, C. (2006). Livestock's long shadow: environmental issues and options. Food & Agriculture Organization.

Van Mierlo, K., Rohmer, S., & Gerdessen, J. C. (2017). A model for composing meat replacers: Reducing the environmental impact of our food consumption pattern while retaining its nutritional value. Journal of Cleaner Production, 165, 930-950.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 11: Number of adults with type 2 diabetes

MUFFPP framework of actions' category: Sustainable diets and nutrition

This indicator measures the number and/or prevalence of type 2 diabetes among adults, youth and children.

Overview table

MUFFPP Work stream	Sustainable Diets and Nutrition
MUFFPP action	Address non-communicable diseases associated with poor diets and obesity, giving specific attention where appropriate to reducing intake of sugar, salt, trans fats, meat and dairy products and increasing consumption of fruits and vegetables and non-processed foods.
What the indicator measures	Number of adults with type 2 diabetes
Which variables need to be measured / what data are needed	<ul style="list-style-type: none"> ▪ Geography ▪ Socioeconomic variables ▪ Sex ▪ Race/ethnicity
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	-Number of adults, percentage of the population Note: The indicator can also be applied to other population groups such as "Number of children or youth with type 2 diabetes"
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	Instances of diagnosed and undiagnosed diabetes
Possible sources of information of such data	-National health department surveillance systems -WHO diabetes country profiles
Possible methods/tools for data-collection	-Review of national datasets -Surveys among primary healthcare providers
Expertise required	Data analysis, survey design and implementation

Resources required/ estimated costs	
Specific observations	Prevalence data generally does not distinguish between type 1 & 2 diabetes but 90-95% of instances are type 2.
Examples of application	

Rationale/evidence

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin it produces. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades. Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980. The global prevalence (age-standardized) of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population. This reflects an increase in associated risk factors such as being overweight or obese. Over the past decade, diabetes prevalence has risen faster in low- and middle-income countries than in high-income countries. Diabetes caused 1.5 million deaths in 2012. Higher-than-optimal blood glucose caused an additional 2.2 million deaths, by increasing the risks of cardiovascular and other diseases. Because sophisticated laboratory tests are usually required to distinguish between type 1 diabetes (which requires insulin injections for survival) and type 2 diabetes (where the body cannot properly use the insulin it produces), separate global estimates of diabetes prevalence for type 1 and type 2 do not exist. The majority of people with diabetes are affected by type 2 diabetes. This used to occur nearly entirely among adults, but now occurs in children too. Diabetes and its complications bring about substantial economic loss to people with diabetes and their families, and to health systems and national economies through direct medical costs and loss of work and wages. While the major cost drivers are hospital and outpatient care, a contributing factor is the rise in cost for analogue insulins which are increasingly prescribed despite little evidence that they provide significant advantages over cheaper human insulins¹.

Glossary/concepts/definitions used

Type 2 diabetes: Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such a deficiency results in increased concentrations of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves. Type 2 diabetes is much more common and accounts for around 90% of all diabetes cases worldwide. It occurs most frequently in adults, but is being noted increasingly in adolescents as well².

Preparations

A meeting should be organised with all staff who will be involved in this activity to:

- Familiarise them with diabetes surveillance data and measurement
- Agree on the objectives and scope of the analysis and data collection requirements
- Define the methodology to be applied for data collection and analysis, and
- How to coordinate the activities.

¹ World Health Organization. (2016). Global report on diabetes. World Health Organization. http://apps.who.int/iris/bitstream/handle/10665/204871/9789241565257_eng.pdf;jsessionid=5066019369BD F5A33376336470B598A1?sequence=1

² WHO Fact Sheet #138: Diabetes Mellitus. Available from <http://www.who.int/mediacentre/factsheets/fs138/en/>.

Data Collection and Analysis

Crude estimates of urban diabetes prevalence may be drawn based on the WHO 2016 country level estimates³. This could be achieved by prorating national statistics according to the urban population in question. This would not take into account urban vs rural differences. A second approach would be to search for existing population health surveillance datasets or conducting a survey among households and primary care professionals using a randomized sample to estimate the city's diabetes prevalence. The U.S. Centres for Disease Control and Prevention (CDC) has published detailed diabetes estimates along with explanations of their methodologies⁴.

CDC Estimates of Diagnosed and Undiagnosed Diabetes among Adults Aged 18 Years or Older

The percentage of adults aged 18 years or older with diabetes (diagnosed or undiagnosed) was obtained using 2011–2014 National Health and Nutrition Examination Survey (NHANES) data. People who self-reported being told by a doctor or health professional that they had diabetes (other than during pregnancy) were classified as having diagnosed diabetes. Those not reporting a history of diagnosed diabetes but who had either a fasting plasma glucose greater than or equal to 126 mg/dl or an A1C level greater than or equal to 6.5% were classified as having undiagnosed diabetes. For consistency with earlier estimates, fasting glucose values were adjusted using recommended regression equations. People with missing values for either fasting glucose or A1C and pregnant women were excluded. People with diagnosed diabetes from the interviewed sample were combined with people with undiagnosed diabetes from the fasting plasma glucose subsample. Appropriate sampling weights were used so that the sum of the weights added to the total U.S. population.

The age-specific percentages of diagnosed and undiagnosed diabetes for age groups 18–44, 45–64, and 65 years or older were then applied to the corresponding July 1, 2015 U.S. resident population estimates from the U.S. Census Bureau to derive the age-specific numbers of adults with diagnosed and undiagnosed diabetes. These age-specific numbers of adults were added to obtain the estimated total number of adults with diagnosed and undiagnosed diabetes. The same procedure was used to obtain the total number of adults with diagnosed and undiagnosed diabetes by sex. Age-adjusted percentages of diagnosed and undiagnosed diabetes were calculated among adults aged 18 years or older by sex, race/ethnicity, and education level by the direct method to the 2000 U.S. Census standard population, using age groups 18–44, 45–64, and 65 years or older⁵.

References and links to reports/tools

Centers for Disease Control and Prevention. (2014). National diabetes statistics report: estimates of diabetes and its burden in the United States, 2014. Atlanta, GA: US Department of Health and Human Services, 2014.

World Health Organization: Diabetes country profiles (2016). Available from <http://www.who.int/diabetes/country-profiles/en/>

World Health Organization. (2016). Global report on diabetes. World Health Organization.

³ World Health Organization: Diabetes country profiles 2016. Available from <http://www.who.int/diabetes/country-profiles/en/>.

⁴ Centers for Disease Control and Prevention. (2014). National diabetes statistics report: estimates of diabetes and its burden in the United States, 2014. Atlanta, GA: US Department of Health and Human Services, 2014.

⁵ CDC (2014). Op. cit.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 12: Prevalence of stunting for children under 5 years

MUFPP framework of actions' category: Sustainable diets and nutrition

This indicator measures prevalence of stunting (poor linear growth) among children under 5 years. Stunting refers to low height for age, reflecting a sustained past episode or episodes of under-nutrition and poor health.

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	Address non-communicable diseases associated with poor diets and obesity, giving specific attention where appropriate to reducing intake of sugar, salt, trans fats, meat and dairy products and increasing consumption of fruits and vegetables and non-processed foods.
What the indicator measures	Prevalence of stunting (poor linear growth) among children under 5 years. Stunting refers to low height for age, reflecting a sustained past episode or episodes of under-nutrition and poor
Which variables need to be measured / what data are needed	-Height and age -This indicator can be disaggregated by sex, age, household income, and other socioeconomic and spatial qualifiers.
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Percentage of stunting among children under 5 years – Height (cm) for age (months) <-2 SD of WHO Child Growth Standards median.
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	Children under 5 years
Possible sources of information of such data	-Public school records, municipal public health records -Population surveillance data from WHO, national health departments -Primary data collection from primary health care providers
Possible methods/tools for data-collection	-Data analysis from existing records: data might already have been collected as part of school routine health checks where these measures are taken. -Household surveys
Expertise required	Data analysis, survey design and implementation.

	Requires carrying height boards to measure heights of children and specific training for accurate measurement. Requires determining child's age in months accurately.
Resources required/ estimated costs	
Specific observations	<p>Data quality problems can be eliminated or minimised through proper survey planning, thorough training, continuous standardization, and close field supervision to ensure adherence to measurement protocols throughout the data collection process.</p> <p>This indicator will usually not allow to show observable changes in many small scale interventions and over short periods of time.</p>
Examples of application	

Rationale/evidence

Children's linear growth in the first five years of life is assessed by the stunting indicator. Stunting is evidence that children are too short for their age, which in turn is a reflection of a chronic state of undernutrition.

Undernutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections, and contributes to delayed recovery. The interaction between undernutrition and infection can create a potentially lethal cycle of worsening illness and deteriorating nutritional status. Poor nutrition in the first 1,000 days of a child's life can also lead to stunted growth, which is associated with impaired cognitive ability and reduced school and work performance. In 2016, 22.9% of children under age 5 worldwide had stunted growth. Overall trends are positive. From 2000-2016, stunting prevalence declined from 32.7% to 22.9% globally, and the number of children affected fell from 198 million to 155 million. In 2016, about one in two stunted children lived in South Asia and one in three in sub-Saharan Africa¹.

Despite improvements in the number of population-based, nationally representative surveys conducted since 1990, many countries do not have high quality data on anthropometric indicators that allow an examination of trends over time. In some instances, surveys have been completed and reports written but documentation is either suboptimal or the reports are not made available².

Glossary/concepts/definitions used

Stunting: The World Health Organisation defines stunting as the "height for age" value being less than two standard deviations of the WHO Child Growth Standards median³.

Preparations

A meeting should be organised with all staff who will be involved in this activity to:

- Familiarise them with the methodological guidelines
- Agree on the objectives and scope of the analysis and data collection requirements
- Develop/ adapt a survey design if primary data collection is needed, and
- Agree on the frequency and period of data collection.

Data Collection and Analysis

For a detailed overview of the methodology for collecting and analysing data for child stunting estimates, see the methodology chapter in the 2012 UNICEF-WHO global estimates report⁴.

References and links to reports/tools

De Onis, M., Brown, D., Blossner, M., & Borghi, E. (2012). Levels and trends in child malnutrition. UNICEF-WHO-The World Bank joint child malnutrition estimates.

Levels and Trends in Child Malnutrition: Key findings of the 2017 edition (2017). UNICEF / WHO / World Bank Group. Joint Child Malnutrition Estimates.

¹ UNICEF (2018). Undernutrition contributes to nearly half of all deaths in children under 5 and is widespread in Asia and Africa. Available from <https://data.unicef.org/topic/nutrition/malnutrition>.

² De Onis, M., Brown, D., Blossner, M., & Borghi, E. (2012). Levels and trends in child malnutrition. UNICEF-WHO-The World Bank joint child malnutrition estimates. Available from http://www.who.int/nutgrowthdb/jme_unicef_who_wb.pdf.

³ <http://www.who.int/nutgrowthdb/about/introduction/en/index2.html>

⁴ De Onis, et al. (2012). Op. cit.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 13: Prevalence of overweight or obesity among adults, youth and children

MUFPP framework of actions' category: Sustainable diets and nutrition

This indicator measures prevalence of overweight or obesity among adults, youth and children.

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	Address non-communicable diseases associated with poor diets and obesity, giving specific attention where appropriate to reducing intake of sugar, salt, trans fats, meat and dairy products and increasing consumption of fruits and vegetables and non-processed foods.
What the indicator measures	Prevalence of overweight or obesity among adults, youth and children
Which variables need to be measured / what data are needed	Body weight and height measurements; age and gender
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Percentage of populations that are overweight or obese
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	-Need for disaggregation by age: Birth to <5 years of age; age 5-18; >18 years of age -Need for disaggregation by gender
Possible sources of information of such data	Primary collection of individual measurements in school setting for children and youth and from primary healthcare professionals for adults. Municipal public health system records; Public school records.
Possible methods/tools for data-collection	Previous or ongoing records and surveys by the health department Direct measurement
Expertise required	Height and weight measurement
Resources required/ estimated costs	

Specific observations	Note: This indicators covers in fact 3 indicators: overweight in children under 5 years of age (which is SDG indicator 2.2.2); obesity in school-aged children (ages 5-19), and adult obesity. Sources and standards are different for each.
Examples of application	In 2014, the Toronto Public Health department conducted The Student Survey that collected health information, including the direct measurement of students' height and weight. Public Health Nurses and assistants visited 466 classrooms at 165 schools during a 7-week period. The survey sample included 6,053 grade 7 to 12 students. The sample was designed to represent Toronto's diverse public school students, and took into account grade, school board, an average measure of students' socio-economic status within each school, and each school's location within Toronto. The results found that almost one in three students were overweight or obese, putting them at higher risk for heart disease, diabetes and some cancers later in life ¹ .

Rationale/evidence

Obesity is a complex health issue to address. Obesity results from a combination of causes and contributing factors, including individual factors such as behaviour and genetics. Behaviours can include dietary patterns, physical activity, inactivity, medication use, and other exposures. Additional contributing factors in our society include the food and physical activity environment, education and skills, and food marketing and promotion. Obesity is associated with poorer mental health outcomes, reduced quality of life, diabetes, heart disease, stroke, and some types of cancer².

Childhood obesity is reaching alarming proportions in many countries and poses an urgent and serious challenge. The Sustainable Development Goals, set by the United Nations in 2015, identify prevention and control of non-communicable diseases as core priorities, and child overweight is one component of SDG indicator 2.2.2. Among the non-communicable disease risk factors, obesity is particularly concerning and has the potential to negate many of the health benefits that have contributed to increased life expectancy. The prevalence of infant, childhood and adolescent obesity is rising around the world. Although rates may be plateauing in some settings, in absolute numbers there are more children who are overweight and obese in low- and middle-income countries than in high-income countries. Obesity can affect a child's immediate health, educational attainment and quality of life. Children with obesity are very likely to remain obese as adults and are at risk of chronic illness³.

Glossary/concepts/definitions used

BMI: Body mass index (kg/m^2) = weight (kg)/height² (m^2)

ADULT OVERWEIGHT AND OBESITY: Weight that is higher than what is considered as a healthy weight for a given height is described as overweight or obese. BMI is used as a screening tool for overweight or obesity. Overweight is defined as a BMI of 25.0 to <30, and obesity is a BMI of 30.0 or higher.

¹ Toronto Public Health. Healthy Futures: 2014 Toronto Public Health Student Survey. March, 2015. <https://www.toronto.ca/legdocs/mmis/2015/hl/bgrd/backgroundfile-76820.pdf>

² Centers for Disease Control & Prevention (2017). Adult Obesity Causes & Consequences. Available from <https://www.cdc.gov/obesity/adult/causes.html>.

³ World Health Organization (2016). Report of the Commission on Ending Childhood Obesity. 2016. WHO Press. Geneva. <http://www.who.int/end-childhood-obesity/publications/echo-report/en/>

CHILDHOOD OBESITY: From birth to less than 5 years of age: weight-for-height more than 3 Standard Deviation (SD) above the WHO Child Growth Standards median⁴. From age 5 to less than 19 years: BMI-for-age more than 2 SD above the WHO growth reference median⁵.

CHILDHOOD OVERWEIGHT: From birth to less than 5 years of age: weight-for-height more than 2 SD above WHO Child Growth Standards median⁶. From age 5 to less than 19 years: BMI-for-age more than 1 SD above WHO growth reference median⁷.

⁴ Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2014; 384:766–81.

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)60460-8/abstract](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60460-8/abstract)

⁵ Roberto CA, Swinburn B, Hawkes C, Huang TTK, Costa SA, Ashe M, et al. Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking. *Lancet*. 2015; 385:2400–9.

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)61744-X/abstract?code=lancet-site](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)61744-X/abstract?code=lancet-site)

⁵ Ng et al. (2014), op. cit.

⁶ Ng et al. (2014), op. cit.

⁷ Roberto et al. (2015), op. cit.

Data Collection and Analysis

Child Overweight and Obesity Measurement

Child overweight and obesity measurement is often coordinated through the school system. But the surveillance project requires collaboration among a wide range of local stakeholders whose assistance can help to improve delivery of the programme, data and information that needs to be collected, staff training and equipment required and which schools and children should be included. Engaging with local authority staff, primary care professionals, providers, schools, parents and children themselves can help with delivery and ensure all involved understand the purpose, benefits and outcomes of the programme.

Taking the Measurements

Measurements should take place in a private room where the results are secure and cannot be seen or heard by anyone who is not directly involved in taking the measurements. In the exceptional case that a separate room is not available, a screened-off area of a classroom can be used. Practitioners should ensure that the calibrated weighing scale is placed on a firm, level surface with the read-out display concealed from the participating child and others. Practitioners should also ensure the height measure is correctly assembled and is placed on a firm, level surface with its stabilisers resting against a vertical surface (such as a wall or door) to ensure maximum rigidity. It is good practice to confirm that the height measure is correctly assembled by checking with an item of known length, such as a metre ruler.

For a step by step guide to measuring child and youth overweight and obesity, see the National Child Measurement Programme Operational Guidance (2017)⁸.

Adult Overweight and Obesity Measurement

For a guide to measuring adult overweight and obesity, see TOOL E3 Measurement and assessment of overweight and obesity⁹.

Data disaggregation

Data need to be disaggregated by age (Birth to <5 years of age; age 5-18; >18 years of age) and gender.

References and links to reports/tools

Centers for Disease Control & Prevention (2016). Defining Adult Overweight and Obesity. Available from <https://www.cdc.gov/obesity/adult/defining.html>.

De Onis, M., Brown, D., Blossner, M., & Borghi, E. (2012). Levels and trends in child malnutrition. UNICEF-WHO-The World Bank joint child malnutrition estimates.

Levels and Trends in Child Malnutrition: Key findings of the 2017 edition (2017). UNICEF / WHO / World Bank Group. Joint Child Malnutrition Estimates.

Public Health England (2017). National Child Measurement Programme Operational Guidance 2017. Available from

⁸ Public Health England (2017). National Child Measurement Programme Operational Guidance 2017. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/643226/PHE_national_child_measurement_programme_operational_guidance.pdf.

⁹ UK Faculty of Public Health. TOOL E3 Measurement and assessment of overweight and obesity – ADULTS. Available from http://www.fph.org.uk/uploads/HealthyWeight_SectE_Toolkit03.pdf.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/643226/PHE_national_child_measurement_programme_operational_guidance.pdf.

UK Faculty of Public Health. TOOL E3 Measurement and assessment of overweight and obesity – ADULTS. Available from http://www.fph.org.uk/uploads/HealthyWeight_SectE_Toolkit03.pdf.

World Health Organization (2016). Report of the Commission on Ending Childhood Obesity. 2016. WHO Press. Geneva.



**Food and Agriculture
Organization of the
United Nations**



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 14: Number of city-led or supported activities to promote sustainable diets

MUFPP framework of actions' category: Sustainable diets and nutrition

The indicator measures the number of city-led or supported activities to promote sustainable diets. Data might be disaggregated by type of activity and target audience.

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	Develop sustainable dietary guidelines to inform consumers, city planners (in particular for public food procurement), food service providers, retailers, producers and processors, and promote communication and training campaigns.
What the indicator measures	Number of city-led or supported activities to promote sustainable diets
Which variables need to be measured / what data are needed	Total number of activities, number of people participating in activities
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Number of city-led or supported activities
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	Data can be disaggregation by type of activity and target audience
Possible sources of information of such data	Records from local government departments or NGOs supporting activities
Possible methods/tools for data-collection	-Analysis of records -Survey among community agencies/ NGOs
Expertise required	Data analysis, survey design and implementation
Resources required/ estimated costs	

Specific observations	The indicator can monitor activities on sustainable diets from a specific perspective that is of most interest to a given city. Cities and countries have – according to their priorities –for example focused on the following variables of sustainable diets: seasonal, local, organic production, consuming less meat and fish; and considering packaging. In Germany, there is an additional focus on purchasing fair trade–certified produce wherever possible ¹ .
Examples of application	Some countries, such as Germany and Sweden, have developed guidelines for their citizens that integrate health and sustainability when making food choices. However, the Swedish guidelines were withdrawn following incompatibility with the European Union’s internal market.

Rationale/evidence

The choices we make about the food we eat affect our health and have major ramifications for the state of the environment. The food system is responsible for more than a quarter of all greenhouse gas (GHG) emissions, of which up to 80% are associated with livestock production. Without targeted dietary changes, the situation is expected to worsen as a growing and wealthier global population adopts diets resulting in more GHG emissions and that increase the health burden from chronic, non-communicable diseases associated with high body weight and unhealthy diets². There is no consensus on what constitutes a sustainable diet but, in general, it is one with “low environmental impacts that contribute to food and nutrition security and healthy life for present and future generations”³. By this or any other definition, no country has achieved a sustainable diet at this point.

Glossary/concepts/definitions used

Sustainable Diet: Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimising natural and human resources⁴.

City-led or Supported Activities: Any type of event, publication or activity designed to promote sustainable diets to the local population or more broadly in collaboration with regional and/or national partners.

Preparations

The team responsible for monitoring this indicator should agree on:

1. Type of data disaggregation and categories that will be used
2. Data collection method, and
3. List of departments or community agencies/ NGOs from which to request data.

¹ Clonan, A., & Holdsworth, M. (2012). The challenges of eating a healthy and sustainable diet. *Am J Clin Nutr* September 2012. Vol. 96 no. 3 459-460. <https://academic.oup.com/ajcn/article/96/3/459/4576746>

² Springmann, M., Godfray, H. C. J., Rayner, M., & Scarborough, P. (2016). Analysis and valuation of the health and climate change co-benefits of dietary change. *Proceedings of the National Academy of Sciences*, 113(15), 4146-4151. <http://www.pnas.org/content/113/15/4146>

³ FAO. (2010). Sustainable diets and biodiversity. Directions and solutions for policy, research and action. In Proceedings of the international scientific symposium: “biodiversity and sustainable diets united against hunger”, 3-5 November 2010. Rome, Italy: FAO Headquarters. <http://www.fao.org/docrep/016/i3004e/i3004e.pdf>

⁴ FAO. (2010). Op cit.

Sampling:

Given that sustainable diet promotion is still a new area, it is unlikely that sampling will be needed.

Data Collection and Analysis

Data disaggregation can be done by the type of activity and the type and number of audiences targeted by the activity.

Type of Activity

Indicate the number and different types of activities to promote sustainable diets:

- ▶ Reports
- ▶ Public information campaigns
- ▶ Events
- ▶ Training

Types of Audiences

- ▶ General public
- ▶ Government officials
- ▶ Health professionals
- ▶ Schools
- ▶ Others

References and links to reports/tools

Birt, C., Buzeti, T., Grosso, G., Justesen, L., Lachat, C., Lafranconi, A. & Sarlio-Lähteenkorva, S. (2017). Healthy and Sustainable Diets for European Countries.

Donati, M., Menozzi, D., Zighetti, C., Rosi, A., Zinetti, A., & Scazzina, F. (2016). Towards a sustainable diet combining economic, environmental and nutritional objectives. *Appetite*, 106, 48-57.

FAO. (2010). Sustainable diets and biodiversity. Directions and solutions for policy, research and action. In Proceedings of the international scientific symposium: “biodiversity and sustainable diets united against hunger”, 3e5 November 2010. Rome, Italy: FAO Headquarters.

Mason, P., & Lang, T. (2017). Sustainable diets: How ecological nutrition can transform consumption and the food system. Taylor & Francis.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

March 2021 version

Indicator 15: Existence of policies/programmes that address sugar, salt and fat consumption in relation to specific target groups (e.g. general public, in hospitals & schools)

MUFPP framework of actions' category: Sustainable diets and nutrition

The indicator measures the existence of laws/regulations/policies/programmes that address sugar, salt and fat consumption in relation to specific target groups (e.g. general public, in hospitals and schools).

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	<ul style="list-style-type: none"> - Explore regulatory and voluntary instruments to promote sustainable diets involving private and public companies as appropriate, using marketing, publicity ... - Encourage joint action by health and food sectors to implement integrated people-centred strategies for healthy lifestyles and social inclusion.
What the indicator measures	Existence of laws/regulations/policies/programmes that address sugar, salt and fat consumption in relation to specific target groups (e.g. general public, in hospitals & schools)
Which variables need to be measured / what data are needed	<ul style="list-style-type: none"> . Number and type of laws, regulations, policies and programmes . Level of implementation and enforcement and Information and communication . Number and type of information and communication mechanisms and target groups
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	<ul style="list-style-type: none"> . Number (and types) of laws, regulations, policies and programmes . Number and type of information and communication mechanisms and target groups
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	<ul style="list-style-type: none"> . Laws/Regulations/Policies/ programmes related to sugar, salt and fat consumption
Possible sources of information of such data	<ul style="list-style-type: none"> -City council -Health departments, education departments, -School boards/ associations -Hospitals

Possible methods/tools for data-collection	<ul style="list-style-type: none"> ▪ Data collection from existing reports ▪ Surveys
Expertise required	Data analysis, survey design and implementation
Resources required/estimated costs	
Specific observations	
Examples of application	

Rationale/evidence

Non-communicable diseases (NCDs) are increasing at alarming rates globally. The burden of NCDs in developing countries outweighs that of communicable diseases, both in high and low-income countries. There are globally more than 1 billion overweight people and at least 300 million of them are clinically obese. Close to 800 million people are suffering from malnutrition, a slow decline over the past decade. Lifestyle and consumption patterns are key determinants of such diseases and include changes in diets, physical activity and tobacco use. Rapid changes in diets and lifestyles that have occurred with industrialisation, urbanisation, economic development and market globalisation, have accelerated over the past decade. This is having a significant impact on the health and nutritional status of populations, particularly in developing countries and in countries in transition. While standards of living have improved, food availability has expanded and become more diversified, and access to services has increased, there have also been significant negative consequences in terms of inappropriate dietary patterns, decreased physical activities and increased tobacco use. Changes in the world food economy are reflected in shifting dietary patterns, for example, increased consumption of energy-dense diets high in fat, sugar and salt. Because of these changes in dietary and lifestyle patterns, chronic NCDs (including obesity, diabetes mellitus, cardiovascular disease (CVD), hypertension and stroke, and some types of cancer) are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries, placing additional burdens on already overtaxed national health budgets¹.

Glossary/concepts/definitions used

NCDs: A non-communicable disease (NCD) is a medical condition or disease that is not caused by infectious agents (non-infectious or non-transmissible). NCDs can refer to chronic diseases which last for long periods of time and progress slowly. NCDs also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behaviours factors. The main types of NCDs are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes (<http://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>)

Policy: A course of action adopted by government (business or organisation) to induce certain changes in the decisions and behaviour of actors in that society in order to achieve certain goals.

Programme: A set plan of activities to produce positive outcomes for a specific or targeted population.

Preparations

The team responsible for monitoring this indicator should agree on the type of data disaggregation and categories that will be used and the data collection method.

Sampling

A purposely sampled number of external stakeholders (e.g. health departments, education departments, school boards/ associations, hospitals) could be engaged in a participatory analysis of existing policies and programmes.

¹ World Health Organization. (2003). Diet, nutrition and the prevention of chronic diseases: Report of a Joint WHO/FAO Expert Consultation. Available from http://apps.who.int/iris/bitstream/10665/42665/1/WHO_TRS_916.pdf?ua=1.

Data Collection and Analysis

During a monitoring/review meeting the following table can be discussed and filled. Specific observations made during the meeting can be added in the final column. Also recommendations for improvement can be added here.

Scoring sheet

Characteristics	Scoring			Total score	Disaggregation of information	Observations/ Recommendations
Presence of policies/programmes that address sugar, salt and fat consumption in relation to specific target groups	Yes= 1 point	No= 0 points			-Number and type of laws/policies and regulations -Type of target groups addressed	
Level of implementation: is the municipal policy/implementation actually implemented or enforced?	Yes, completely= 2 points	Partially= 1 point	No= 0 points		-Discuss for each of the policies or regulations. -Indicate reasons for partial or non-implementation/enforcement	
Information and communication: Are policies and regulations widely shared within city government and to potential beneficiaries	Yes, completely= 2 points	Partially= 1 point	No= 0 points		-Number and type of information and communication mechanisms and target groups	
Total score:						

Note: If existing, it may be relevant to further critically assess the specific policies or programmes themselves in order to highlight areas for improvement. The critical policy analysis proposed for Indicator 3 (*Presence of a municipal urban food policy or strategy and/or action plans*) may be used and adapted for this purpose.

Data analysis/calculation of the indicator

Based on the scoring and further information provided, participants in the monitoring/review process may identify gaps or areas for strengthening or improvement:

- How can existing policies and programmes be better implemented and communicated?
- What new or revised policies and programmes are proposed?
- What process should be followed to implement these changes? Steps to be taken? Stakeholders to be involved? Critical time-lines? Resources required?

References and links to reports/tools

World Health Organization. (2003). Diet, nutrition and the prevention of chronic diseases: Report of a Joint WHO/FAO Expert Consultation. Available from http://apps.who.int/iris/bitstream/10665/42665/1/WHO_TRS_916.pdf?ua=1.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

July 2018 version

Indicator 16: Presence of programmes/policies that promote the availability of nutritious and diversified foods in public facilities

MUFPP framework of actions' category: Sustainable diets and nutrition

The indicator monitors presence of programmes/policies that promote the availability of nutritious and diversified foods in public facilities.

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	Adapt standards and regulations to make sustainable diets and safe drinking water accessible in public sector facilities such as hospitals, health and childcare facilities, workplaces, universities, schools, food and catering services, municipal offices and prisons, and to the extent possible, in private sector retail and wholesale food distribution and markets.
What the indicator measures	Presence of programmes/policies that promote the availability of nutritious and diversified foods in public facilities
Which variables need to be measured / what data are needed	<ul style="list-style-type: none"> ▶ Number and type of policies and programmes ▶ Level of implementation ▶ Information and communication ▶ Types of public facilities
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	<ul style="list-style-type: none"> ▶ Number (and types) of policies and programmes ▶ Number and type of information and communication mechanisms and target groups
Unit(s) of Analysis (i.e. people under 5 years old, etc.)	<ul style="list-style-type: none"> ▶ Policies/ programmes related to nutritious and diversified foods in public facilities
Possible sources of information of such data	<ul style="list-style-type: none"> ▶ City council public records ▶ Health departments ▶ Education departments, school boards/ associations
Possible methods/tools for data-collection	<ul style="list-style-type: none"> ▶ Programme/ policy review and document analysis
Expertise required	<ul style="list-style-type: none"> ▶ Policy and document analysis

Resources required/ estimated costs	
Specific observations	
Examples of application	

Rationale/evidence

Consumption of sufficient, safe, and nutritious food is critical to the health and well-being of any urban household/individual. The Milan Pact Monitoring Framework proposes a set of indicators to measure different aspects of sustainable diets and nutrition. The combination of these indicators provides the more comprehensive analysis. Non-communicable diseases (NCDs) are increasing at alarming rates globally. The burden of NCDs in developing countries outweighs that of communicable diseases, both in high and low-income countries. There are globally more than 1 billion overweight people and at least 300 million of them are clinically obese. Close to 800 million people are suffering from malnutrition, a slow decline over the past decade. Lifestyle and consumption patterns are key determinants of such diseases and include changes in diets, physical activity and tobacco use. Rapid changes in diets and lifestyles that have occurred with industrialisation, urbanisation, economic development and market globalisation, have accelerated over the past decade. This is having a significant impact on the health and nutritional status of populations, particularly in developing countries and in countries in transition. Changes in the world food economy are reflected in shifting dietary patterns, for example, increased consumption of energy-dense diets high in fat, sugar and salt. Because of these changes in dietary and lifestyle patterns, chronic NCDs (including obesity, diabetes mellitus, cardiovascular disease (CVD), hypertension and stroke, and some types of cancer) are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries, placing additional burdens on already overtaxed national health budgets¹.

Local governments have the opportunity to set standards for the quality of foods available in public facilities such as government offices, parks, community centres, childcare sites and events. While the majority of food access points (supermarkets, convenience stores, etc.) are not run by governments, setting standards in publically run environments can help normalize healthier, more diversified food options and leverage public funding to support the development of supply chains for these foods.

Glossary/concepts/definitions used

Diversified Foods/ Food Group Diversity: Refers to the diversity of consumption. For this purpose, food items are grouped under overall food groups. The ten used food groups are: 1. Grains, white roots and tubers, and plantains 2. Pulses (beans, peas and lentils) 3. Nuts and seeds 4. Dairy 5. Meat, poultry and fish 6. Eggs 7. Dark green leafy vegetables 8. Other vitamin A-rich fruits and vegetables 9. Other vegetables 10. Other fruits².

Policy: A course of action adopted by government (business or organisation) to induce certain changes in the decisions and behaviour of actors in that society in order to achieve certain goals.

Programme: A set plan of activities to produce positive outcomes for a specific or targeted population.

Public Facility: Any building, place or event that is wholly funded or directly operated by a government department or agency.

¹ World Health Organization. (2003). Diet, nutrition and the prevention of chronic diseases: Report of a Joint WHO/FAO Expert Consultation. Available from http://apps.who.int/iris/bitstream/10665/42665/1/WHO_TRS_916.pdf?ua=1.

² The food groups are further described and defined in <http://www.fao.org/3/a-i5486e.pdf>, Section 2, and Appendix 2

Preparations

The team responsible for monitoring this indicator should agree on the type of data disaggregation and categories that will be used and the data collection method.

Sampling

A randomly sampled number of internal and external stakeholders (e.g. health departments, education departments, school boards/ associations, hospitals) could be engaged in a participatory analysis of existing policies and programmes.

Data Collection and Analysis

During a monitoring/review meeting the following table can be discussed and filled. Specific observations made during the meeting can be added in the final column. Also recommendations for improvement can be added here.

Scoring sheet

Characteristics	Scoring			Total score	Disaggregation of information	Observations/Recommendations
Presence of programmes/policies that promote the availability of nutritious and diversified foods in public facilities	Yes= 1 point	No= 0 points			-Number and type of policies and programmes -Distinguish among types of facilities	
Level of implementation: is the municipal policy/implementation actually implemented or enforced?	Yes, completely= 2 points	Partially = 1 point	No= 0 points		-Discuss for each of the policies or programmes. -Indicate reasons for partial or non-implementation/enforcement	
Information and communication: Are policies and regulations widely shared within city government and to potential beneficiaries	Yes= 1 point	Partially= 1 point	No= 0 points		Number and type of information and communication mechanisms and target groups	
Total score:						

Note: If existing, it may be relevant to further critically assess the specific policies or programmes themselves in order to highlight areas for improvement. The critical policy analysis proposed for Indicator 3 (*Presence of a municipal urban food policy or strategy and/or action plans*) may be used and adapted for this purpose.

Data analysis/calculation of the indicator

Based on the scoring and further information provided, participants in the monitoring/review process may identify gaps or areas for strengthening or improvement:

- ▶ How can existing policies and programmes be better implemented and communicated?
- ▶ What new or revised policies and programmes are proposed?
- ▶ What process should be followed to implement these changes? Steps to be taken? Stakeholders to be involved? Critical time-lines? Resources required?

References and links to reports/tools

World Health Organization. (2003). Diet, nutrition and the prevention of chronic diseases: Report of a Joint WHO/FAO Expert Consultation. Available from http://apps.who.int/iris/bitstream/10665/42665/1/WHO_TRS_916.pdf?ua=1.



Food and Agriculture
Organization of the
United Nations



Milan Urban Food Policy Pact Monitoring Framework

March 2021 version

Indicator 17: Percentage of population with access to safe drinking water and adequate sanitation

MUFPP framework of actions' category: Sustainable diets and nutrition

The indicator measures the percentage of population with access to safe drinking water and adequate sanitation. By disaggregating the data spatially and by different socioeconomic strata, it is possible to identify which parts of the population are being left behind.

Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
MUFPP action	<p>- Adapt standards and regulations to make safe drinking water accessible in public and private sector facilities such as hospitals, health and childcare facilities, workplaces universities, schools, food and catering services, municipal offices and prisons, and to the extent possible, in private sector retail and wholesale food distribution and markets.</p> <p>- Invest in and commit to achieving universal access to safe drinking water and adequate sanitation with the participation of civil society and various partnerships, as appropriate.</p>
What the indicator measures	Percentage of population with access to safe drinking water and adequate sanitation
Which variables need to be measured / what data are needed	<ul style="list-style-type: none"> • Regional differences • Socio-economic variations • Informal urban settlements • Locally important marginalized groups.
Unit of measurement (i.e. Percentages, averages, number of people, etc.)	Percentage of population
Unit(s) of Analysis (i.e. people under 5 years old, ect.)	<p>Current data can be disaggregated for place of residence and subnational region as well as wealth. Over time, the ambition is to include informal urban settlements in the data collected, as well as to develop survey instruments that can capture marginalized groups.</p> <p>By disaggregating the data spatially and by different socioeconomic strata, it is possible to identify which parts of the population are being left behind.</p>

Possible sources of information of such data	-Household surveys -Institution/ utility records and licensed sanitation emptying service providers
Possible methods/tools for data-collection	Household surveys
Expertise required	Survey data collection and analysis. Experience in primary research in marginalised communities.
Resources required/ estimated costs	
Specific observations	
Examples of application	In 2015, WHO and UNICEF provided estimates for safely managed drinking water for 96 countries, representing 35% of the global population ¹ .

Rationale/evidence

Access to water, sanitation and hygiene is a human right, but approximately 1.8 billion people use a source of drinking water that is fecally contaminated. Globally 2.4 billion people lack access to basic sanitation services. More than 80 percent of wastewater resulting from human activities is discharged into rivers or sea without any treatment, leading to pollution².

Water and sanitation improvements, in addition to hygiene behaviour education, can have significant health effects by reducing a variety of disease conditions such as diarrhoea, intestinal helminths, guinea worm, and skin diseases. Water and sanitation improvements affect health primarily by interrupting or reducing the transmission of disease agents. Raising the quality of drinking water reduces the ingestion of pathogens. With less disease, children can eat and absorb more food, thereby improving their nutritional status. Also, a healthier adult population is a more productive population, and improvements in water and sanitation can improve income and the capacity to acquire food³.

Improving the quality and quantity of water available can also lead to greater income generation or food production activities, both of which could result in the intake of more and better food, improving a family's diet as well as child health outcomes. A safely managed sanitation chain is essential to protecting the health of individuals and communities. Leaking latrines and raw wastewater can spread disease and provide a breeding ground for mosquitoes, as well as pollute groundwater and surface water that may serve as potential sources of drinking water.

Target 6 of the Sustainable Development Goals calls for the achievement by 2030 of “universal and equitable access to safe and affordable drinking water for all” and “access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations”. Women and girls are a specific demographic of interest because increasing access to water and sanitation means they will not have to walk for hours to collect water and not having to share sanitary facilities with other households improves women's security. Reduced time in accessing water also frees up time to care for sick household members. Improved access also supports menstrual hygiene management which will help to enable more women and girls

¹ World Health Organization and the United Nations Children's Fund (2017). Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and SDG baselines. Available from <http://www.who.int/mediacentre/news/releases/2017/launch-version-report-jmp-water-sanitation-hygiene.pdf>.

² United Nations (2006). Clean Water and Sanitation: Why it matters. Available from http://www.un.org/sustainabledevelopment/wp-content/uploads/2016/08/6_Why-it-Matters_Sanitation_2p.pdf.

³ Billig, P., Bendahmane, D. & Swindale, A. (1999). Water and Sanitation Indicators Measurement Guide. Food and Nutrition Technical Assistance Project, Academy for Educational Development.

to attend school and work outside the home⁴.

Glossary/concepts/definitions used

Access to a safe water source: The home or compound is connected directly to a piped system or that a public fountain, well, or stand post is located within 200 meters of the home.

Safe drinking water: The water is free of contaminants. The treatment needed for water to qualify as “safe” is directly dependent on the quality of the raw water.

Improved sanitation facility: Includes flush or pour-flush toilets to sewerage systems, septic tanks or pit latrines, improved pit latrines (pit latrines with a slab or ventilated pit latrines) and composting toilets. Improved sanitation facilities that do not fulfil the above-mentioned criteria for treatment are categorized as “basic” services. If the facility is shared with other households the service is categorized as “limited”.

Use of safely managed sanitation services: A sanitation facility is the predominant means of excreta disposal for household members >12 months of age.

Preparations

Local governments will need to link with national government agencies and ministries in coordination data collection and analysis. One option could include an inter-sectoral monitoring team that includes statistical offices, national agencies/ ministries and other sector representatives. The responsibility for data collection, analysis and dissemination, as well as reporting, could then fall on the inter-sectoral team. Establishing mechanisms for easy and transparent sharing and validation of data is critical for ensuring a strong link among stakeholders for implementing solutions.

A meeting should be organised with all partners who will be involved in this activity to:

- Agree on the objectives and scope of the analysis and data collection requirements
- Define the methodology to be applied for data collection and analysis, and
- How to coordinate the activities within the team.

Sampling:

Data are collected by means of a survey of a random sample of households. A cluster survey should not be used because water sources may be location related. The survey should be carried out at the time of year when the water quantity is lowest or most sources have run dry. The surveyor(s) should visit each house or compound and verify access to a water supply. In some cases, the distance to the water supply may have to be measured to be sure it is within 200 meters⁵.

Data Collection and Analysis

This section provides an overview of key issues in data collection and analysis. For a more comprehensive guide, please refer to the resources below:

- The Integrated Monitoring Guide for Sustainable Development Goal 6 (2017)⁶ provides additional information on definitions, variables for disaggregation, complementary indicators and stages of monitoring.

⁴ UN Water (2017). Integrated Monitoring Guide for Sustainable Development Goal 6 on Water and Sanitation – Targets and global indicators.

⁵ Billig et al. (1999), op. cit.

⁶ UN Water (2017), op. cit.

- USAID's Water and Sanitation Indicators Measurement Guide (1999)⁷ is an in depth guide covering monitoring indicators for measuring water and sanitation-related program performance with definitions, calculation, sources of data and target values.
- The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation developed a set of harmonized survey questions on access to water and sanitation facilities⁸.

⁷ Billig et al. (1999), op. cit.

⁸ World Health Organization (2006). Core questions on drinking-water and sanitation for household surveys. Available from http://www.who.int/water_sanitation_health/monitoring/oms_brochure_core_questionsfinal24608.pdf.

Indicator	Potential Data Sources	Notes
Percentage of households with year-round access to a safe water source	Data are collected by means of a survey of a random sample of households. A cluster survey should not be used because water sources may be location related.	WHO collected data on “reasonable access to safe drinking water” from national governments five times during the International Decade for Drinking Water Supply and Sanitation (1980 to 1990). Such access was defined for urban areas as access to piped water or a public standpipe within 200 meters of a dwelling or housing unit. For rural areas, “reasonable” is taken to mean that a family member need not spend a “disproportionate” part of the day collecting water.
Proportion of the population using safely managed sanitation services	Household surveys in which the surveyor asks the mother or household head about family latrine use and then inspects the latrine to see if it is functioning, hygienic and shows signs of use.	<p>Improved sanitation facilities include flush or pour-flush toilets to sewerage systems, septic tanks or pit latrines, improved pit latrines (pit latrines with a slab or ventilated pit latrines) and composting toilets.</p> <p>Improved sanitation facilities that do not fulfil the above-mentioned criteria for treatment are categorized as “basic” services. If the facility is shared with other households the service is categorized as “limited”.</p> <p>For young children, the issue is whether their feces are deposited into a sanitation facility, not whether they actually use the facility themselves. For example, mothers may put soiled diapers or feces from small potties into a latrine.</p>

Variables for Disaggregation

The indicators related to sanitation facilities can be disaggregated by service level – no services, limited services, basic services and safely managed services. The monitoring of access “for all”, as well as the aspect of affordability, require disaggregation of data to capture potential inequalities across socioeconomic strata, including within households and geographical locations. In certain regions, it may be useful to include an indicator on time spent collecting water, to further analyse the state of “basic” services. It is also important to monitor access beyond the household, in institutional settings such as schools, health-care facilities and the workplace.

Other potential data variables to explore for analysis include:

- Regional differences
- Socio-economic variations
- informal urban settlements
- locally important marginalized groups

By disaggregating the data spatially and by different socioeconomic strata, it is possible to identify which parts of the population are being left behind.

References and links to reports/tools

Billig, P., Bendahmane, D. & Swindale, A. (1999). Water and Sanitation Indicators Measurement Guide. Food and Nutrition Technical Assistance Project, Academy for Educational Development.

UN Water (2017). Integrated Monitoring Guide for Sustainable Development Goal 6 on Water and Sanitation – Targets and global indicators.

UN Water (2016). How to use the Integrated Monitoring Guide for SDG 6. Available from https://www.pseau.org/outils/ouvrages/un_water_how_to_use_the_integrated_monitoring_guide_for_sdg6_2016.pdf.

World Health Organization (2006). Core questions on drinking-water and sanitation for household surveys. Available from http://www.who.int/water_sanitation_health/monitoring/oms_brochure_core_questionsfinal24608.pdf.

World Health Organization and the United Nations Children's Fund (2017). Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and SDG baselines. Available from <http://www.who.int/mediacentre/news/releases/2017/launch-version-report-jmp-water-sanitation-hygiene.pdf>.