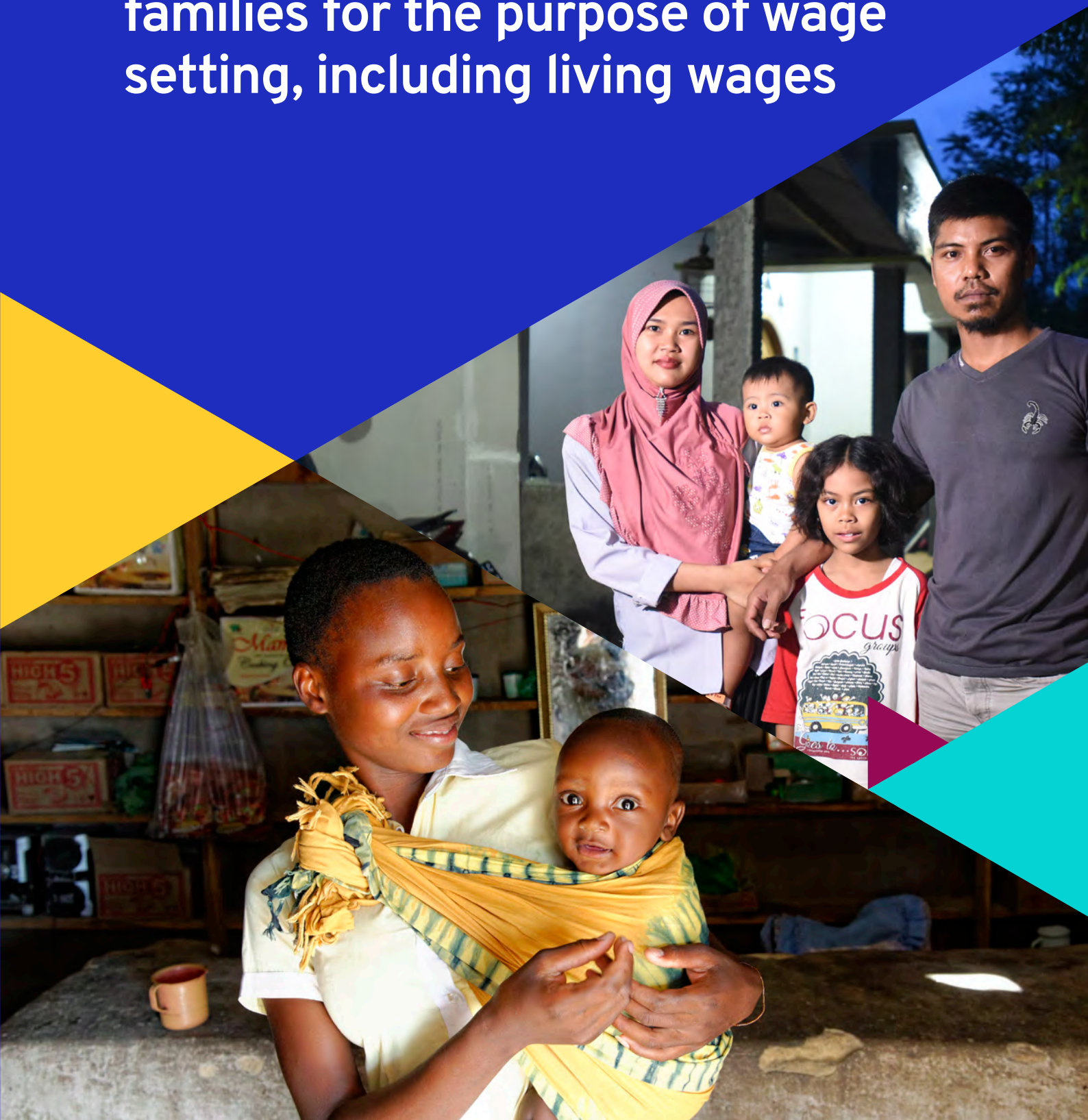
International Labour Organization

A methodology to estimate the needs of workers and their families for the purpose of wage setting, including living wages



A methodology to estimate the needs of workers and their families for the purpose of wage setting, including living wages

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Abbreviations

AEEI	adult equivalent energy intake
carbs	carbohydrates
CBN	cost of basic needs
FAO	Food and Agriculture Organization of the United Nations
ILO	International Labour Organization
INWORK	Inclusive Labour Markets, Labour Relations and Working Conditions Branch, International Labour Organization
OECD	Organisation for Economic Cooperation and Development
RESEARCH	Research and Publications Department, International Labour Organization
UN-Habitat	United Nations Human Settlements Programme
WHO	World Health Organization

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Introduction

Introduction

Effective wage-setting institutions – particularly minimum wages and collective bargaining – can help ensure a just and equitable share of the fruits of progress for all. Negotiating and determining an adequate wage level is a difficult undertaking, however. It requires an evidence-based approach that takes into account the needs of workers and their families, as well as various economic factors. This approach is important to ensure that social justice and economic progress go hand in hand, as recognized in various ILO instruments, such as the Minimum Wage Fixing Convention, 1970 (No. 131) and the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy.

In recent years, the question of "living wages" has also emerged as a major topic of interest. Recognizing the need for a tripartite agreement on this issue, the ILO, in February 2024, held a Meeting of Experts on wage policies, including living wages. The experts adopted conclusions that were endorsed by the ILO Governing Body in March 2024. The conclusions provide clarity on a wide range of questions around living wages, including on the concept of living wages, the principles for their estimation, the principles for their operationalization, and future action to be taken by the International Labour Office.

According to the conclusions, the ILO denotes that the concept of a living wage is:

- the wage level that is necessary to afford a decent standard of living for workers and their families, taking into account the country circumstances and calculated for the work performed during the normal hours of work;
- calculated in accordance with the ILO's principles of estimating the living wage;
- to be achieved through the wage-setting process in line with ILO principles on wage setting.

The full text of the conclusions can be read in the Appendix.

The present document provides a detailed description of a methodology that can be used by governments and social partners to estimate the needs of workers and their families in different national circumstances, including for social dialogue on wages and living wages. It is a technical document that provides guidance on how household income and expenditure surveys – a widely available type of survey, which is conducted regularly by the national statistical offices of many countries – can be used to estimate these needs through a multidimensional approach, taking into account the cost of adequate food, housing, healthcare, education and other essential needs.

The methodology was developed and initially tested in four pilot countries – Costa Rica (ILO 2021a), Ethiopia (ILO 2021b), Indonesia (ILO 2021c) and Viet Nam (ILO 2021d) – in the context of a technical cooperation project, funded by the Ministry of Foreign Affairs of the Netherlands, with the aim of strengthening the capacity of governments and social partners to negotiate and set adequate wage levels. The methodology was revised to be in line with the ILO principles for estimating living wages, including transparency, public availability, the use of evidence-based methodologies and robust data, and the consideration of regional and local contexts and socio-economic and cultural realities.

To ensure national ownership, representative employers' and workers' organizations should be consulted on living wage estimates and involved throughout their development. In this sense, this methodology is flexible enough to be adapted through social dialogue at the national level, depending on the specific needs and circumstances of the country.

The methodology builds on the existing literature and available methodologies.[1] However, the design process has been driven by the desirability of developing a methodology that not only is easily adaptable to specific country circumstances, thereby helping to promote national ownership and social dialogue, but can also be applied under tight time and resource constraints using the comprehensive data collected by national statistical offices.

While the methodology presented in this document can be used to estimate the wage level necessary to afford a decent standard of living for workers and their families, some caveats – highlighted in the different sections of the report – should be kept in mind, and further improvement may be needed. Furthermore, no methodology will ever be able to capture the full complexity and varying needs of the household of every single worker. In addition, since the methodology has been tested only in low- and middle-income countries, its relevance to developed countries should be assessed, and possible adjustments should be envisaged to adapt the methodology for use in developed countries.

Lastly, it should be recalled that both the needs of workers and their families and the relevant economic factors should be considered when operationalizing living wages. The present methodology focuses only on the needs of workers and their families and should be used in conjunction with data and information on relevant economic factors. The root causes of low pay, such as unfair distribution of value, low total factor productivity, informality and weak institutions and compliance systems, should also be addressed during the operationalization of living wages.

This document is divided into six chapters. Chapter 1 provides a brief overview of the conceptual framework of the methodology and its underlying assumptions, while Chapters 2 to 5 provide a detailed explanation of how to estimate the cost of a decent standard of living for each of the following expenditure categories: food; housing; healthcare and education; and other essential goods and services. Lastly, Chapter 6 provides an explanation of how to aggregate the outcomes of Chapters 2 to 5 in order to obtain living wage estimates derived from the assumptions made with regard to family size and the number of working adults per family.

1 From Rowntree (1901), to the World Bank's method for estimating national poverty lines, through to the work on estimating living wages carried out by Anker and Anker (2017).

1 Brief overview of the methodology

1. Brief overview of the methodology

This chapter starts by presenting a concise overview of the methodological framework developed to estimate living wages. The methodology uses household income and expenditure surveys from national statistical offices to separately estimate the costs of four dimensions: adequate food; decent housing; healthcare and education; and other essential needs. The detailed methodological steps for estimating these four dimensions are set out in Chapters 2 to 5. These costs are then added together to estimate the total needs for a reference family size. To do this, decisions must be made regarding what reference family size to consider and whether to use the adult equivalent scale, both of which are discussed in the second section of the present chapter. The third section of this chapter discusses assumptions regarding the number of working adults in the family, which is used to convert the total cost of needs into living wage estimates. The fourth section focuses on what sample size should be considered when estimating living wages. This chapter concludes by describing how the methodology is aligned with the ILO principles for estimating living wages, as set out in the conclusions of the Meeting of Experts on wage policies, including living wages (see Appendix).

A multidimensional approach combining relative and absolute measures

The baseline methodology – which is open to country-specific adaptation – sets out a general framework for assessing the needs of workers and their families through a multidimensional approach that separately estimates the cost of living for the following four dimensions:

(a) **Cost of food:** A low-cost diet that provides sufficient calories, proteins and fats and that is suitable for the target population in terms of composition. This is measured normatively on the basis of the calorie and nutrient standards defined by the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO).

(b) **Cost of housing:** A basic but decent dwelling at an acceptable standard. Following the recommendations of the United Nations Human Settlements Programme (UN-Habitat), this is measured normatively on the basis of national and international housing standards, which cover characteristics such as living space, durability, facilities and access to water.

(c) **Cost of healthcare and education:** A basic level of healthcare and education expenditure, which is calculated as a separate group. Unlike food and housing needs, the cost of healthcare and education needs is estimated using a relative approach that draws on the national distribution of expenditure for healthcare and education.

(d) **Cost of other essential goods and services:** All other expenditures (such as clothing and transportation) are grouped together. As with healthcare and education needs, the cost of other essential goods and services is estimated using a relative approach that draws on the national distribution of expenditure for other essential goods and services.

This methodology combines absolute measures for food and housing with relative measures for the cost of healthcare and education and for other essential goods and services – a combination that is well in line with the philosophy of ILO Convention No. 131 (see box 1). Indeed, by combining relative and normative approaches, this method has the advantage of taking into consideration both the socio-economic realities of the country and the living standards of social groups that do not earn a minimum wage.

Box 1. A combination of absolute and relative measures

An important consideration is whether an absolute (also known as "normative") or relative measure ought to be adopted when estimating the expenditure categories for the basic cost of living. Absolute measures are defined using normative standards. This means that a normative basket of goods and services, considered to represent a minimum standard, is defined in terms of quantities and qualities and is later valued at purchase or market prices in order to determine the cost. Conversely, relative measures are defined as some proportion – for example, 60 per cent – of the median household income or expenditure. This means that the value of relative measures rises with increases in median welfare.

Absolute measures were pioneered by Rowntree (1901) in his effort to calculate the poverty line, for which he interviewed almost 20 per cent of the population of York, the United Kingdom of Great Britain and Northern Ireland. Rowntree carefully calculated the minimum weekly sum of money "necessary to enable families to secure the necessities of a healthy life". He deliberately made this sum of money the lowest level that experts advised, so that "no one would be able to pretend that the sum was not the border of real poverty". Individuals and households whose income fell below this level were defined as poor. This is known as absolute poverty.

Although this methodology is used to calculate the poverty line, it is also used in a number of countries – in a similar way or with variations – to define the minimum wage. Indonesia, for example, adopted the "*kebutuhan hidup layak*" [decent living needs] definition, which constitutes, in principle, the consensual and normative basket of goods and services for a minimum wage worker. In Viet Nam, Decree No. 27/2018/ND-CP mandates the provision of a minimum wage, which must ensure a "basic standard of living" for all workers, across four key economic regions.

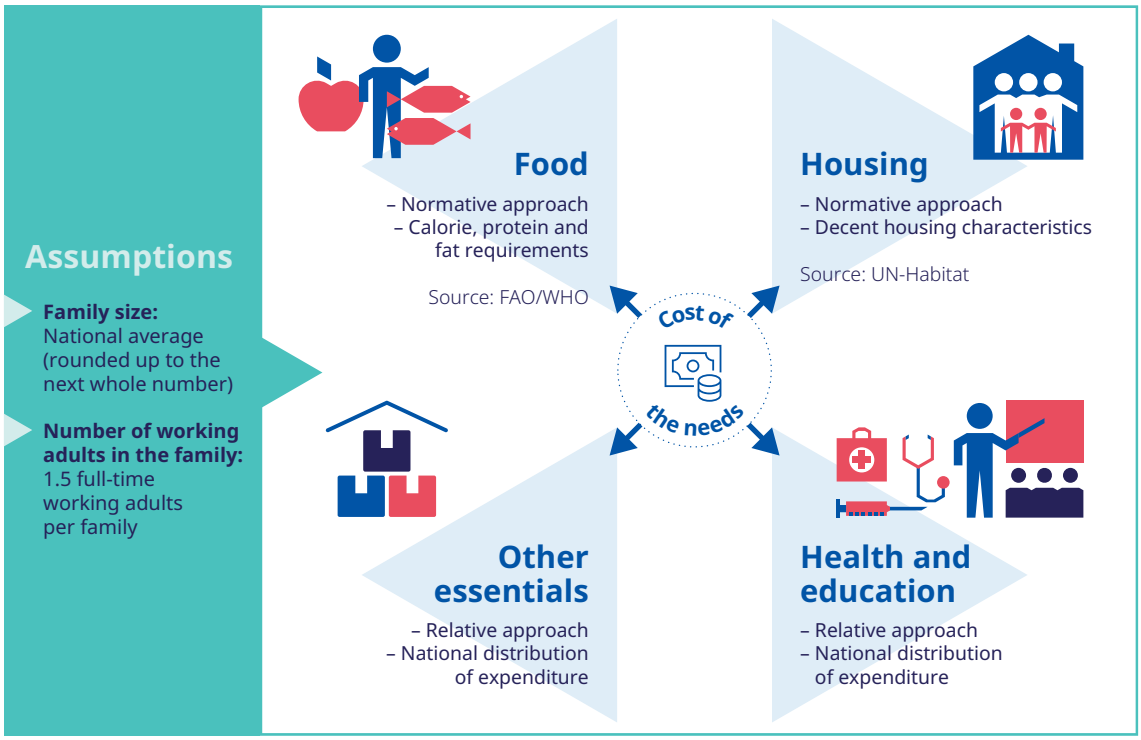
Relative measures reflect the idea that the definition of basic needs evolves as societies prosper. In its broadest sense, freedom from poverty can be viewed as the fulfilment of the need to function in a society in a socially acceptable manner (World Bank 2018). As Franklin D. Roosevelt stated, the wages of a decent living should be more than the bare subsistence level.[1] It may not be possible to create a "one-size-fits-all" approach, however, since there are important socio-economic differences across countries in terms of their productive structures, demographic characteristics and urbanization rates. Relative measures are usually preferred in developed economies. Poorer countries, meanwhile, may find it useful to adopt a more normative approach as a starting point, whereas in richer countries – where absolute minimum levels are met by most people – poverty may take on more of a relative meaning.

Our baseline methodology combines normative elements (for food and housing) with relative elements. This is also in line with the philosophy of Convention No. 131, which highlights a combination of elements to be considered in relation to the needs of workers and their families, including not only the cost of living, but also the relative living standards of other social groups. It therefore appears to be most sensible to adopt a combination of absolute and relative measures in order to create a dynamic estimation of the needs of workers and their families.

1 "It seems to me to be equally plain that no business which depends for existence on paying less than living wages to its workers has any right to continue in this country. By 'business' I mean the whole of commerce as well as the whole of industry; by workers I mean all workers, the white collar class as well as the men in overalls; and by living wages I mean more than a bare subsistence level – I mean the wages of decent living" (Roosevelt 1933).

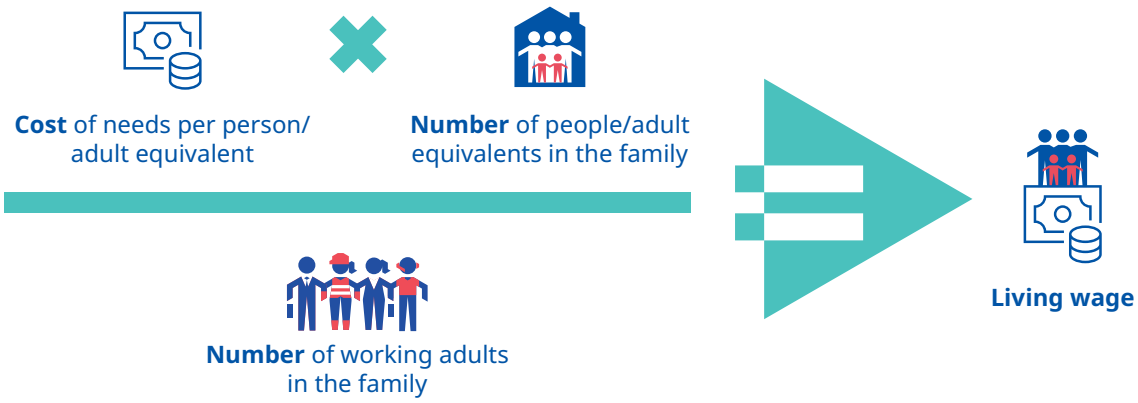
Figures 1 and 2 illustrate the conceptual framework of the methodology. As seen in figure 1, the methodology is built around the four above-mentioned dimensions of the needs of workers and their families. The first step is to estimate separately the cost of adequate food, adequate housing, healthcare and education, and other essential needs for one person (or one adult equivalent). Second, these separately estimated costs are added together to provide an estimate of the total needs of one person (or one adult equivalent). To convert these individual needs into the needs of a worker and his or her family, an assumption must be made with regard to the choice of reference family size (and its corresponding number of adult equivalents). In this baseline methodology, we propose using the average family size in the country, rounded up, to reflect real possible family size. However, as discussed in the following section, the decision as to what family size to adopt may ultimately be left to the discretion of the tripartite entity interested in applying a living wage in a given setting. Accordingly, estimations based on multiple family-size scenarios may also be presented, and the assumption with regard to family size may constitute one of the adaptable elements of the methodology.

▶ **Figure 1. Conceptual framework of the baseline methodology**



When using an estimation of the needs of workers and their families to strengthen the capacity of governments and social partners to negotiate and set adequate wage levels, it is essential to convert the total needs of a family into a wage level sufficient to cover them – the so-called living wage. However, this step requires another assumption to be made with regard to the number of full-time working adults in the family. If two wages should be sufficient to cover the total needs of a family, the wage level should be half the cost of the total needs. However, if one wage should be sufficient to cover the total needs of a family, this wage should be equal to the total needs. Therefore, as figure 2 shows, in order to convert the total needs of workers and their families into a living wage, it is essential to divide the needs by the number of working adults in the family. In this baseline methodology, we propose using a normative baseline of 1.5 full-time working adults for any family comprising more than one person. This assumption is discussed in the third section of the present chapter.

▶ **Figure 2. Estimation of the living wage**



Reference family size and adult equivalence

As figure 2 shows, the estimated cost of living for one member of the family is multiplied by a reference family size. Family size and composition is a crucial consideration when estimating a living wage. Should we use average household size, as determined by national statistics? Or should we use the size of households in the lower tiers of the labour market? Or is there another referential household to be considered? This is obviously very important, as the wage required to support a family of five is evidently going to be higher than the wage required to support a family of three.

In the present baseline methodology, we use the national average family size rounded up to the next whole number. However, it is worth noting that poorer households tend to have larger families, which may translate into greater needs. Ultimately, while it is essential to provide a reference family size when estimating the needs of workers and their families, the decision as to what family size to adopt should be left to the discretion of the tripartite entity interested in applying a living wage in its particular setting. This is why, in the national studies conducted as part of this project, in addition to the selected reference family size based on the national average, we provide estimations based on multiple family-size scenarios. Using a range of household sizes provides useful information for minimum wage-fixing. Debate may be required regarding the most appropriate reference family size to use in a particular setting.

Another question concerns the use of adult equivalence scales. Such scales are used to take into account the economies of scale that arise from people living together (for example, one refrigerator may be sufficient even for a family of four), as well as the fact that children may have small fooder needs than adults. Two types of equivalence scales are used here:

- **Equivalence scales for food and calorie needs.** As discussed in more detail in the section on estimating food costs, FAO and WHO calorie recommendations are used here to convert all household calorie needs into those of one male "adult equivalent energy intake" (AEEI). For example, if one male adult aged 30–60 requires 2,950 kilocalories (kcal) per day and one woman of the same age requires 2,400 kcal per day, the woman's calorie requirement corresponds to 0.81 AEEI (namely, 2,400 out of 2,950 kcal). The total calorie requirement for such a family is 5,350 kcal per day, or 1.81 AEEI (5,350/2,950 kcal).

- **Equivalence scales for total household consumption.**[2] These scales are used in this study to, among other things, partition and rank a country's households into quintiles (or deciles) on the basis of total monthly expenditure per adult equivalent, which is calculated for each household in the survey. In this case, we can use either an adult equivalence scale at the country level, as formulated by the national statistical office (if available), or the equivalence scale developed by the Organisation for Economic Cooperation and Development (OECD) (also known as the "Oxford scale"),[3] which typically assigns a value of 1 to the household head, 0.7 to each additional adult member and 0.5 to each child.[3]

It should be noted that the use of equivalence scales for household consumption remains somewhat controversial. The main question is whether such large economies of scale in household consumption really exist. Significant evidence exists to support the two opposing conclusions. According to a number of recent studies, although children consume less food, they consume more of other goods, such as education, healthcare or clothing. Estimates of the needs of workers and their families are, of course, sensitive to the use of equivalence scales (Ravallion 2015). Therefore, the use of different adult equivalences is not a panacea but rather a methodological decision.

Given the implications of using equivalence scales, in particular how they might affect estimates of the needs of workers and their families, our methodology uses a variety of approaches to convert the needs of a single family member to those of the entire family. As shown in table 1, adult equivalence estimates use the above-mentioned OECD and AEEI equivalence scales to estimate the needs of workers and their families for the dimensions of food, housing and other essential goods and services, for which the existence of economies of scale are assumed and commonly accepted. In contrast, per capita estimates are used when there is no evidence of economies of scale for a dimension of need, as is the case for healthcare and education needs, given that access to them or their consumption cannot be shared among different family members. For such needs, therefore, each member of the family should individually be entitled to decent access.

It should also be noted that the OECD equivalence scale is particularly important for our methodology, as it is used to classify households into quintiles on the basis of their total monthly expenditure per adult equivalent. Such a classification allows us to identify a reference quintile that can be used to determine the basic but decent consumption basket for food needs. In this study, this classification is also used to provide a relative estimate of needs regarding healthcare and education and other essential goods and services.

▶ Table 1. Coefficients used to account for family size

Type of expenditure	Coefficient used to account for family size	Comments
Total expenditure	Adult equivalent scale (OECD)	Used to create quintiles
Food expenditure	AEEI (FAO/WHO)	Economies of scale are assumed on the basis of calorie needs
Housing expenditure	Adult equivalent scale (OECD)	Economies of scale are assumed
Health and education expenditure	Per capita measurement	No economies of scale are assumed
Other essential expenditures	Adult equivalent scale (OECD)	Economies of scale are assumed

2 It is important to differentiate these scales, which are used for total household expenditure analysis, from the above-mentioned AEEI, which is used only for calorie analysis.

3 See OECD (n.d.).

For each country and region, the application of the equivalence scales varies because household composition and demographics vary. When applying a given equivalence scale, a coefficient is associated with each family member, and then the coefficients are added together to produce the total family size in adult equivalents. An average number of adult equivalents is therefore associated with each family size, depending on the equivalence scale used (OECD or AEEI). Table 2 shows that the average number of adult equivalents in Viet Nam varies according to the equivalence scale applied to household size and composition. The numbers are different in table 3, which presents the results for Ethiopia. For households comprising more than two persons, the number of adult equivalents is higher in Viet Nam than in Ethiopia for the same household size, possibly because there is a higher number of adults per household in Viet Nam than in Ethiopia. Equivalence scale coefficients assigned to children are lower than those assigned to adults.

▶ Table 2. Adult equivalent figures for different sizes of household, according to data from the national expenditure survey in Viet Nam, 2018

Household size	1	2	3	4	5	6	7
Average AEEI	0.82	1.70	2.60	3.34	4.01	4.71	5.46
Average adult equivalent (as per the OECD scale)	1.00	1.68	2.29	2.83	3.45	4.07	4.69

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

▶ Table 3. Adult equivalent figures for different sizes of household, according to data from the national expenditure survey in Ethiopia, 2018/19

Household size	1	2	3	4	5	6	7
Average AEEI	0.90	1.74	2.41	3.10	3.86	4.60	5.34
Average adult equivalent (as per the OECD scale)	1.00	1.64	2.20	2.76	3.30	3.83	4.38

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

Number of full-time working adults

To estimate the wage necessary to provide a decent standard of living for workers and their families, it is essential to define how many wage and/or income recipients are assumed to live in a family. In contrast to family size, the number of full-time workers has a reducing effect on the living wage level. To determine the living wage, the total cost of the needs of workers and their families is divided by the number of full-time working adults in the family who are assumed to be employed. Just as with family size, however, the number of full-time working adults assumed to live within the reference family is subject to a methodological choice. Broadly, the choice lies in deciding what constitutes the most suitable measure of the number of full-time working adults to use as the denominator in the calculation. Should we assume that there is only one full-time working adult in the family? Or perhaps two full-time working adults? Should we use the observed number of full-time working adults in the household? Or instead a fixed number of full-time working adults, set normatively between one and two? For the present baseline methodology, we selected the last option; we propose using a fixed number of full-time working adults, set at 1.5 full-time working adults for any family comprising more than one person.

According to an empirical analysis based on the four pilot countries covered in the present document, it appears reasonable to assume 1.5 full-time working adults per family. In order to assess the validity of this assumption, the average number of full-time working adults in the reference family size was computed for each of the pilot countries. To reflect the reality of families that might potentially be affected by wage policies, we decided to limit our analysis to those households comprising at least one wage earner. As shown in table 4, among these households, the number of full-time working adults (including own-account workers and wage earners) varies significantly, from 1.34 in Ethiopia to 1.95 in Viet Nam. The average of the four countries is 1.57, a number relatively close to our assumption of 1.5 full-time working adults per family.

It should also be noted that, in some cases, these estimates reflect differences in the composition of households. For instance, in Viet Nam, the relatively high number of working adults reflects the fact that, in numerous four-person households, we observed more than two adults working. However, in households comprising two adults and two children, the average number of full-time working adults was 1.69; while still higher, this number appears to be closer to our assumption of 1.5 full-time working adults.

▶ **Table 4. Average number of full-time working adults in households that include at least one wage earner**

	National average of number of full-time working adults in households that include at least one wage earner	Reference family size
Ethiopia (2018/19)	1.34	5
Viet Nam (2018)	1.95	4
Indonesia (2018)	1.62	4
Costa Rica (2018)	1.36	3
Average	1.57	–

Note: The estimation of the number of full-time working adults includes both own-account workers and wage earners. The reference family size refers to the national average family size rounded up to the next whole number.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

To summarize, while the decision to use the assumption of 1.5 full-time working adults per family may, to some extent, appear subjective, it also carries a number of advantages. It allows the use of a number that is always between one and two working adults, which seems a realistic assumption. It also appears to be relatively consistent with the empirical realities of the families observed in the pilot countries. In addition, it simplifies the calculation and avoids the need to estimate the number of full-time working adults, which in some cases might be challenging to assess through income and expenditure surveys. Unlike labour force surveys, which are designed to capture information about the labour market, household income and expenditure surveys are not designed solely for that purpose and, as a result, it can be challenging to identify labour market indicators with a strong degree of certainty. However, in the national studies, in addition to the results based on the hypothesis of 1.5 working adults per family, we also include the extreme values – namely, one working adult and two working adults – in order to provide the full range of living wage estimates relevant to minimum wage setting.

Reducing the sample?

So far, the analysis considers all households in a given country. However, a subsection of the labour force, such as households with at least one wage earner, could instead be analysed.

In the context of estimating a living wage with a view to informing minimum-wage-setting mechanisms, it appears legitimate to consider whether the sample population should be limited to those households with at least one wage earner, given that they constitute the potential beneficiaries of any minimum wage policy. In the present baseline methodology, however, we recommend using all households, irrespective of whether they include a wage earner or not. This recommendation draws on a number of conceptual and practical considerations. First, we believe that the concept of the needs of workers and their families should not be dependent on the labour market status of the family members and that, as mentioned in ILO Convention No. 131, their needs should reflect the living standards enjoyed

by other social groups. Second, in some developing countries, wage earners represent a very low proportion of the employed population. Limiting the sample to households with at least one wage earner might therefore result in the exclusion of an overwhelmingly large share of the population and give rise to small-sample bias. For example, according to the 2013 National Labour Force Survey conducted in Ethiopia, wage employees represent only 10 per cent of total employment; the remaining 90 per cent of the employed population are own-account workers, employers or unpaid family workers. In such a context, limiting the sample to only those households with at least one wage earner would create bias, and the results would not be representative of the needs of workers and their families for the large majority of the population. Third, another practical consideration is that the methodology relies on the use of household income and expenditure surveys, in which – as mentioned above – it might be challenging to identify wage earners with a strong degree of certainty.

With regard to regional considerations, given that the present methodology seeks to strengthen the capacity of governments and social partners to negotiate and set adequate minimum wage levels, we recommend that, if different minimum wage rates are to be set for each geographical region within a given country, the methodology should be applied separately for each relevant geographic area. While some countries have only one national minimum wage that applies to all employees in the country, other countries have several minimum wage rates that are differentiated by sector of activity, occupation, employee age or geographical region. For example, in Viet Nam, the minimum wage varies across four geographical zones: region 1, which includes Hanoi and Ho Chi Minh City, has the highest minimum wage, while region 4 has the lowest. Therefore, in Viet Nam we applied the methodology to estimate the living wage in the country as a whole, as well as separately for each of the four minimum wage zones. This allows the needs of workers and their families to be compared with the respective minimum wage levels. In Indonesia, meanwhile, there is no national minimum wage floor, and the setting of minimum wages is decentralized, allowing the establishment of minimum wages by province and district (ILO 2020). Living wage estimates were, therefore, made separately for each province. Owing to the large number of regional and local divisions and subdivisions in Indonesia, however, only the broad regional groups were considered in our estimates, which provide relevant information at the province level for comparison with national minimum wage levels.

How does the methodology align with the ILO principles for estimating living wages?

Paragraph 8 of the conclusions of the Meeting of Experts on wage policies, including living wages, which were adopted by the ILO Governing Body in 2024, provides a list of ten principles that any living wage methodology should follow. This section offers a review of how the present methodology aligns with those principles:

1. **Estimation of the needs of workers and their families through evidence-based methodologies.** The present methodology sets out a general framework for assessing the needs of workers and their families through an evidence-based approach that separately estimates the cost of adequate food, housing, healthcare and education, and other essential needs, on the basis of data collected in the country by its national statistical offices.

2. **Consultation with representative employers' and workers' organizations on living wage estimates and involvement of social partners throughout their development, with a view to ensuring national and/or local ownership.** The flexibility of the methodology allows meaningful consultation at the national level. In every country where the methodology was implemented, both the methodology and the results were

presented to representative employers' and workers' organizations and benefited from the comments and suggestions received from governments and social partners during tripartite meetings.

3. **Transparency, including details with regard to data sources and methods of processing, which must be open to scrutiny, comprehensive and replicable.** The present document provides a transparent and detailed step-by-step guide that can be used by researchers to estimate living wages using data collected through income and expenditure surveys, taking into account the different circumstances of each country.

4. **Robustness of the data in terms of representativeness, and transparent data collection methods.** The methodology uses the most robust data available at country level, as it is based on household income and expenditure surveys carried out and published by national statistical offices. These surveys are nationally representative and, in principle, provide a reliable and often publicly available source of data.

5. **Timely public availability of the estimates, data and methodologies.** When estimating living wages on the basis of the ILO methodology, the ILO encourages the timely publication of all reports in which the estimates obtained are presented, as well as the data and methodologies used. For instance, four separate country reports providing detailed descriptions of the application of the ILO methodology in selected countries were published and disseminated in 2021.

6. **Specification as to whether estimates are gross or net, namely whether items such as social security contributions are included or not.** In principle, in the ILO methodology, taxes and social security contributions are taken into consideration in the cost of other essential goods and services. Therefore, the methodology can in principle produce estimates of the gross living wage. However, income and expenditure surveys may fail to properly capture these expenses. In such cases, taxes and social security contributions should be added through a post-estimate adjustment, as discussed in Chapter 6.

7. **Regular adjustments to consider changes in the cost of living and the patterns of consumption.** Income and expenditure surveys tend to be conducted regularly by national statistical offices, which offers the opportunity to regularly update living wage estimates. Such surveys are not typically conducted every year, however. In the intervening years between surveys, price indices can be used to estimate changes in the cost of living, as discussed in Chapter 6.

8. **Quality control, including sound technical review and validation, as well as periodic review for continuous improvements.** To ensure strong quality control and technical review, the methodology benefited from the expertise of various wage specialists, technical experts and stakeholders active on the topic of living wages. In addition, to ensure continuous improvement, the methodology should be subject to periodic review, including through the production of technical notes aimed at exploring and clarifying specific methodological issues.

9. **Promotion of gender equality and non-discrimination.** The methodology provides for the estimation of non-discriminatory living wages – as living wage estimates are the same for men and women – and promotes gender equality in remuneration. However, more work will be undertaken in the future to more fully understand the gender implications of the methodology. In particular, the ILO will seek to identify possible inadvertent gender biases in the different parts of the methodology, including in the estimations of needs (especially with respect to care work) and the assumed number of workers in the household.

10. **Consideration of the regional or local context and socio-economic and cultural realities.** The methodology uses nationally representative data produced by national statistical offices, which accurately capture national and regional preferences and consumption patterns. By using these data, the methodology can be applied at the national or regional level. However, the level of disaggregation depends on the number of observations, which must be large enough to produce reliable estimates.

2 The cost of adequate food: A normative approach

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2. The cost of adequate food: A normative approach

Food, including drinks, is the most essential need for human beings because it determines not only our very survival but also our quality of health throughout our lives. Beyond being a basic need, food is a fundamental human right enshrined in the Universal Declaration of Human Rights.

Among all the needs of workers and their families, the need for food is the one whose denial has the most serious consequences, which explains the primacy of this need over all others. When food is insufficient in quantity and quality, as may be the case for some low-paid workers, workers and their families become malnourished, exposing them to a range of illnesses as their health weakens. The consequences are even more severe for children. Malnutrition is the leading cause of death for children under five years old, accounting for about half of deaths (UNICEF, WHO and World Bank 2023). For children who survive malnutrition, their physical and mental growth can be seriously impaired, with adverse consequences for their future life opportunities, including the development of their human capital and access to employment and income opportunities. For adults and children alike, insufficient nutrition affects their well-being and compromises their ability to participate actively in society, whether through work, education or interaction with others.

Looking beyond the human aspects of nutrition, the inability of a wage to allow workers and their families to access an adequate level of nutrition also has important costs for the economy. Because of the impact of malnutrition on health and human capital development, the inability of workers to feed themselves sufficiently has a negative effect on their productivity, which, in turn, has negative consequences for businesses and the national economy, as well as for those workers who are not able to access quality productive jobs. In one analysis of the economic cost of malnutrition, researchers estimated that every US$1 invested in nutrition generates US$16 in health and productivity benefits in the form of the improved mental and productive capacity of individuals (Development Initiatives 2017). Furthermore, by diminishing the human capital of their children, malnutrition creates a vicious circle that traps families in poverty.

For these reasons, it is crucial that wages are sufficient to ensure that workers and their families can afford an adequate model diet that provides them with enough calories, protein and fat. Accordingly, in this section, the baseline methodology proposed builds on a number of technical aspects of the cost of basic needs (CBN) methodology used by the World Bank to estimate national poverty lines. However, unlike the poverty line, the purpose of this methodology is to estimate not the vital minimum needs but rather an adequate food basket that fulfils simultaneously the calorie, protein and fat requirements implied by an active or moderately active lifestyle, while taking into account national preferences and consumption patterns. To do this, we go through the following steps:

1. We identify the calorie requirement to be fulfilled on the basis of FAO/WHO recommendations. It should be noted that these requirements vary by gender and age.
2. Since there is no information on the nutrient value of each food item in household income and expenditure surveys, we retrieve data on the calories, protein and fat content of each food item externally and merge them into the data from the household income and expenditure surveys.
3. We construct a reference basket (quantity consumed of each food item) that provides sufficient calories by drawing on the observed consumption patterns of households that are the closest to the required calorie consumption.

4. If necessary, we then adjust the reference food basket to ensure that it covers the requirements for other nutrients, including protein and fat.
5. We estimate the cost of the reference food basket by applying the implicit price of each food item.

The following subsections review steps 1 to 5 in turn and provide examples of their application in the pilot countries. The chapter concludes by considering the validation process and the possible adjustments that may be needed to reflect national circumstances, as well as some alternative estimation strategies.

Step 1: Setting the calorie requirement

What are the needs of workers and their families in terms of food? In step 1, we seek to identify an adequate amount of calories for an individual. The calorie requirement is a good starting point, as insufficient calorie intake is almost always associated with a deficient intake of most nutrients (FAO 2001). In order to identify an adequate calorie intake, the methodology builds on established recommendations regarding minimum calorie requirements. In particular, this baseline methodology proposes using the recommendations produced by the joint FAO/WHO/United Nations University expert consultation in 2001.[4] These recommendations establish the human energy requirements for the attainment and maintenance of optimal health, physiological function and well-being.

A given amount of calories may be consumed in many ways, however. While richer households may choose to opt for a "richer" diet, comprising more diverse food items and more meat, fish and vegetables, the poorest families may have no choice but to consume higher quantities of cereals and lower quantities of meat, fish and vegetables in order to reach the desired amount of calories. This may result in diets that fulfil the calorie requirement but not necessarily other nutritional requirements, such as the required amount of protein or fat. Therefore, the methodology seeks to ensure that the constructed food basket not only yields sufficient calories but also fulfils the requirements for protein and fat set by the FAO/WHO. If this is not the case, a procedure is used to adjust the food basket so that, in addition to the desired amount of calories, it provides a sufficient amount of protein and fat (see step 4).

It is also important to note that the assessment of energetic requirements is guided by normative recommendations that depend on a number of individual characteristics, such as age, gender, body size, presumed body composition and physical activity. Therefore, identifying an adequate requirement for calorie intake requires a number of assumptions to be made, in particular regarding the average weight of men and women as well as the physical activity level that the diet should support.

Regarding the average weight of men and women, Walpole et al. (2012, table 3) estimate that the average weight of individuals ranges from 57.7 kg to 80.7 kg, depending on region. In this baseline methodology, the calorie requirements are identified for an average weight of 65 kg for a woman and 70 kg for a man. While these assumptions may be appropriate for some countries, they may be less appropriate for others. Therefore, the results may need to be validated, and possible adjustments to the methodology may need to be made, if the data suggest that the proposed calorie requirements are inappropriate owing to differences in the average weight of the population (see the section below on validation, possible adjustments, and discussion of alternative methods).

Regarding assumptions about workers' physical activity level, the present methodology follows the recommendations contained in FAO (2001), which suggest that moderate physical activity contributes to maintaining a healthy lifestyle, including an adequate body weight,

4 See FAO (2001).

ensuring good cardiovascular and respiratory health and reducing the risk of developing chronic non-communicable diseases related to diet and lifestyle, such as diabetes and several types of cancer (Black et al. 1996; Ferro-Luzzi and Martino 1996; United States, Centre for Disease Control and Prevention 1996; Glade 1997; Pollock et al. 1998; Schoeller 1998; WHO 2000 and 2002; Erlichman et al. 2001 and 2002; IARC 2002; WHO and FAO 2002; Saris et al. 2003). Accordingly, expert consensus recommends a physical activity level of 1.70 or higher.[5] Assigning a lower score during wage-setting calculations would therefore deprive workers and their families of the opportunity to achieve a lifestyle that ensures good health. Furthermore, given that the methodology aims to provide living wage estimates which are often used in the context of minimum wage-setting, it is important to recall that, in most cases, minimum wage earners are required to carry out jobs that are physically demanding and are generally associated with a moderate or high physical activity level. Therefore, the methodology assumes a moderate physical activity level of 1.75 for all individuals in the population, regardless of their occupation.

In this sense, the present methodology differs from the methodology used to estimate the poverty line, which assumes different physical activity levels for individuals on the basis of their occupation. In doing so, the estimation of the poverty line often attributes a low physical activity level to the majority of the population. For example, in Costa Rica, a comparative analysis revealed that the calorie requirements used in our baseline methodology were higher than the calorie requirements used by the National Institute of Statistics and Census to estimate the basic food basket. The analysis showed that the main reason for this difference was that, when estimating the cost of a basic food basket, the Institute attributed a low physical activity level[6] to approximately 77 per cent of individuals, whereas our estimates attributed a moderate score to all individuals.

According to the FAO/WHO recommendations, assuming a moderate physical activity level and an average weight of 70 kg, a male adult aged 30–60 years requires 2,950 kcal per day, while women, the elderly and children require fewer calories (table 5).[7] We therefore propose creating a scale for male AEEI that measures the calorie requirements of each individual against the male AEEI baseline. The idea is to convert the calorie requirement of every household member into a fraction of that of a male adult equivalent (aged 30–60) who requires 2,950 kcal per day.

This scale is constructed using the FAO/WHO calorie requirement recommendations for each age range, as shown in table 5.[8] We can observe, for example, that a female adult aged 30–60 requires 2,400 kcal per day (0.81 of the male AEEI) and a female child aged 10–11 requires 2,000 kcal per day (0.68 of the male AEEI). Hence, a family composed of these three individuals (one male adult aged 30–60, one female adult aged 30–60 and one female child aged 10–11) would require a male AEEI of 2.49 (1 + 0.81 + 0.68) or 7,345.5 kcal per day (2,950 x 2.49). In summary, the first step in our methodology consists of attributing to each individual in the database the corresponding AEEI coefficient, as shown in table 5.

In most cases, poverty line estimations use national average calorie requirements, which are usually defined as the minimum daily calorie requirement per person, based on the demographic characteristics of the population. Using the daily requirement per person implies the use of a per capita measurement. However, according to Claro et al. (2010) in their study on the differences between adult equivalence and per capita measurements of

5 The physical activity level is a measure of the energy cost of an activity, expressed as a multiple of the basal metabolic rate. The basal metabolic rate is determined principally by gender, body size, body composition and age, and it can be only measured accurately under laboratory conditions where representative individuals are "awake in the supine position, ten to 12 hours after a meal, following eight hours of physical rest and no strenuous exercise in the preceding day, and being in a state of mental relaxation and an ambient environmental temperature that does not evoke shivering or sweating" (FAO 2001). An alternative measure consists of using predictive equations based on variables such as weight and/or height.

6 Equal to 1.55 in urban areas and 1.65 in rural areas (Fonseca 2013).

7 See FAO (2001).

8 See FAO (2001).

calorie availability in the Brazilian population, per capita measurements can underestimate real calorie needs, since they do not reflect differences in household composition. Therefore, in the present baseline methodology we opted for the use of adult equivalent measurements of calorie requirements.

▶ Table 5. Daily energy requirement by age and AEEI coefficient

Age (years)	Required kcal/day		Coefficient (AEEI)	
	Female	Male	Female	Male
1–2	850	950	0.29	0.32
2–3	1 050	1 125	0.36	0.38
3–4	1 150	1 250	0.39	0.42
4–5	1 250	1 350	0.42	0.46
5–6	1 325	1 475	0.45	0.50
6–7	1 425	1 575	0.48	0.53
7–8	1 550	1 700	0.53	0.58
8–9	1 700	1 825	0.58	0.62
9–10	1 850	1975	0.63	0.67
10–11	2 000	2 150	0.68	0.73
11–12	2 150	2 350	0.73	0.80
12–13	2 275	2 550	0.77	0.86
13–14	2 375	2 775	0.81	0.94
14–15	2 450	3 000	0.83	1.02
15–16	2 500	3 175	0.85	1.08
16–17	2 500	3 325	0.85	1.13
17–18	2 500	3 400	0.85	1.15
19–30[1]	2 550	3 050	0.86	1.03
30–60[1]	**2 400**	**2 950**	**0.81**	**1.00**
>60[1]	2 200	2 450	0.75	0.83

[1] For these age ranges, we identified the calorie requirements assuming an average weight of 65 kg for females and 70 kg for males. In addition, a moderate physical activity level of 1.75 implied by a normal lifestyle was assumed.

Source: FAO (2001).

Nevertheless, it is possible to compare the calorie requirements used in the present methodology and described in table 5 with the recommendation used to estimate the national poverty line. To do so, we convert our requirements into per capita values by adding together the recommendations for each individual in the database and dividing the sum by the number of individuals in the database.

Table 6 provides a comparison of the calorie requirements used in the present methodology with the national recommendations and the average calorie intake per capita for Costa Rica,

Ethiopia, Indonesia and Viet Nam. As we can observe in the first column, although the same recommendations for calorie requirements per individual are used in each country, the per capita recommendations differ from one country to another: Ethiopia has the lowest calorie requirements per person and Costa Rica the highest. This is due to demographic differences: of the four countries studied, Ethiopia has the highest number of children as a proportion of the population, while Costa Rica has the lowest. In addition, we can observe that the recommendations used in the present methodology are higher than the national recommendations adopted in all four countries. This difference results from the assumptions regarding physical activity level and may also result from variations in the average weight of men and women in the respective countries. Contrary to our hypothesis of always assuming 65 kg for a female and 70 kg for a male, national calorie intake recommendations are often based on the observed weights of individuals in a given country, whose average level may vary between countries.

▶ **Table 6. Comparison of the calorie requirements used in the present methodology with national recommendations and national average calorie intake, pilot countries (kcal per capita)**

	FAO/WHO recommendation converted to per capita (used in this methodology)	National calorie intake per capita used for poverty line	National calorie intake per capita (based on micro data)
Costa Rica (2018)	2 456	2 213	2 541
Indonesia (2018)	2 409	2 150	2 147
Viet Nam (2018)	2 428	2 300	2 555
Ethiopia (2018/19)	2 309	2 200	2 746

Source: The estimates in columns 1 and 3 are based on FAO (2001), as well as the findings of income and expenditure surveys in each country. The estimates in column 2 were provided by the national authorities.

Step 2: Retrieving information on calorie consumption

For step 2, it is useful to establish a comparison between calorie requirements and the number of calories that households actually consume. But how many calories do households actually consume? Unfortunately, this information is not directly available in household income and expenditure surveys, which provide information only on the quantities of each food item consumed by households. Therefore, it is necessary to complement the surveys with information on the calorific value of each food item. To calculate households' calorie intake, we can retrieve information on the calorific value, as well as the protein and fat value, of each food item present in the database from secondary data. The FAO, in particular, provides food composition tables and databases for every region of the world, as well as for various countries.[9] While we used national food composition tables where available, such data were often unavailable or non-exhaustive for certain food items.

For instance, in the case of Ethiopia, we referred to the FAO food composition table for Africa, as national-level information was not available. Table 7 shows the calorific and nutritional values of each food item included in the household income and expenditure survey for Ethiopia. With this information, it is possible to calculate the actual calorie consumption of households included in the survey. It should be noted that, in some cases, food items were not available in the FAO food composition tables, and information needed to be complemented through other secondary sources.

9 See FAO (n.d.).

▶ Table 7. Composition of food items, Ethiopia

Food ID	kcal/ 100g	Protein (g/100g)	Fat (g/100g)	Carbs (g/100g)	Food ID	kcal/ 100g	Protein (g/100g)	Fat (g/100g)	Carbs (g/100g)
Teff	358	11.0	2.5	73.0	Bula	225	0.2	0.1	55.4
Wheat	326	12.4	2.2	58.7	Sweet potato	115	1.5	0.2	25.3
Barley	361	9.8	2.8	76.2	Boye/yam	128	1.9	0.2	27.5
Maize	353	9.0	4.5	64.3	Cassava	153	1.2	0.3	35.6
Sorghum	344	10.5	3.3	63.1	Godere	102	1.8	0.1	23.8
Millet	348	10.9	4.1	62.6	Other tubers or stems	43	1.4	0.1	10.5
Other cereals	352	7.8	2.2	73.8	Goat and mutton	165	17.5	10.6	0
Horse beans	300	26.1	1.8	31.7	Beef	126	21.7	4.3	0
Field peas	324	20.4	1.9	47.8	Poultry	134	20.4	5.9	0
Chickpeas	357	19.6	3.7	63.5	Fish	108	18.0	4.0	0
Lentils	297	25.4	1.8	29.4	Milk	65	3.4	3.7	4.4
Haricot beans	335	22.1	1.5	53.2	Cheese	122	16.3	3.5	5.7
Groundnuts	567	20.4	43.2	20.3	Eggs	139	12.6	9.5	0.7
Other pulses or nuts	567	20.4	43.2	20.3	Sugar	400	0	0	100.0
Niger seed	483	17.3	33.9	34.2	Salt	0	0	0	0
Linseed	498	18.0	34.0	37.2	Butter/ghee	720	0.8	79.6	0.2
Other seeds	417	10.5	16.0	60.1	Oils (processed)	900	0	100.0	0
Onion	37	1.1	0.1	6.9	Purchased injera	136	4.4	0.9	29.8
Green chili pepper (kariya)	321	14.2	12.6	23.1	Purchased bread or biscuits	367	15.4	13.6	52.3
Red pepper (berbere)	311	8.7	9.6	58.8	Pasta/macaroni	359	12.5	1.5	72.0
Greens (such as kale and cabbage)	28	1.6	0.1	3.9	Other prepared foods consumed at home	352	7.8	2.2	73.8
Tomato	22	1.0	0.2	3.3	Coffee	2	0.1	0	0.5
Other vegetables	28	1.6	0.1	3.9	Chat/kat	0	0	0	0
Banana	99	1.2	0.2	22.1	Tea	0	0.1	0	0
Orange	45	0.7	0.3	8.9	Soft drinks/soda	40	0	0	10.0
Other fruits	56	1.0	0	11.0	Beer	35	0.3	0	2.0
Potato	80	1.9	0.1	16.9	Tella	31	0.5	0	2.7
Kocho	171	1.2	0.2	41.3					

Note: Carbs = carbohydrates.

Source: The food items are those included in the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019). The calorific and nutritional values are taken from FAO (1968).

Step 3: Constructing and adjusting the reference food basket

For step 3, a reference food basket must be constructed that satisfies the calorie requirements defined in step 1, while simultaneously reflecting national tastes and preferences, meaning that the basket should reflect the consumption habits of households in the country. Food consumption is one of the oldest human cultural practices. Conditioned by many environmental, seasonal and cultural factors, the composition of food baskets can contain a broad variety of alternatives. Furthermore, larger countries, such as Indonesia and Viet Nam, show great diversity in the composition of food baskets. Such variation presents another limitation of adopting a normative approach based on a predetermined diet.

We therefore use the following procedure to simulate a reference food basket that satisfies the calorie requirements at minimized cost.

First, we partition the households into quintiles on the basis of their total monthly expenditure per adult equivalent.[10] This is done by ranking all the households present in the database into five groups according to their total expenditure, from the poorest 20 per cent to the richest 20 per cent. To do this, the first step is to calculate the total expenditure of each household in the database and then divide this total expenditure by the number of adult equivalent members in the household. Because expenditure is measured at the household level, ranking households from richest to poorest (in terms of household expenditure) requires information not only on total household expenditure but also on the size of the household. An annual household expenditure of US$6,500, for example, does not have the same implication in terms of wealth for a one-person household as it does for a household with two adults and three children. In order to rank households from richest to poorest, family size must therefore be taken into account. To account for family size and reflect living standards, we could simply divide the total household expenditure by the number of household members. However, because there are economies of scale when several individuals live together and because children have lower material needs than adults, estimating per capita expenditure requires the use of equivalence scales (ILO 2015). Therefore, in this baseline methodology, we suggest using the OECD adult equivalence scale (the Oxford scale), which typically assigns a value of 1 to the household head, 0.7 to each additional adult member and 0.5 to each child. Once this is done, we rank the households from the poorest to the richest and create quintiles on the basis of their total monthly expenditure per adult equivalent.

The methodology is based on the quintile distribution constructed using the monthly household expenditure per adult equivalent. Although this methodology could also have been applied on the basis of income distribution, we used expenditure distribution for two reasons:

(a) Most countries prefer to use data on household expenditure to measure poverty. According to a survey conducted by the United Nations Statistics Division (2005), among 84 countries, almost 50 per cent based their poverty calculations on expenditure data. 30 per cent based their calculations on income data alone, and 12 per cent used both.

(b) The use of expenditure, rather than income data, as the basis for the calculations is supported by the ease and reliability of data collection, since incomes are often underestimated when compared with expenditure (United Nations Statistics Division 2005). For example, in some surveys (especially in many African countries), the income section is not available or is difficult to aggregate.

Once the households have been ranked into quintiles, the average calorie intake per male adult equivalent (using AEEI) per day is then calculated for each quintile. To do this, we first calculate the number of male adult equivalents (aged 30–60) in each household. For

10 In this case, we suggest using the OECD modified equivalence scale. It is important to differentiate such scales from the AEEI; see the above section on reference family size and adult equivalence.

example, a household composed of one male aged 45 (which counts as 1 AEEI) and one woman aged 35 (which counts as 0.81 AEEI) consists of 1.81 male adult equivalents (see table 5). Once we have converted all household members into male adult equivalents (aged 30–60), we calculate the daily calorie intake per adult equivalent; those households with a daily calorie intake per adult equivalent of less than 2,950 kcal do not fulfil the FAO/WHO requirements, as defined in table 5.

The results for Viet Nam are shown in table 8. Although, on average, households in quintile 1 are below the calorie requirement benchmark, the average calorie intake of quintile 2 is closest to the 2,950 kcal benchmark. As a result, we used the latter households to construct a reference food basket that yields 2,950 calories per adult equivalent per day. How did we do this? First, it is important to note that, while households in quintile 2 consume an average of 2,973 kcal, they consume only 2,196 kcal when one considers only food items for which price and quantity information is available. Because the average number of calories consumed by quintile 2 is lower than the 2,950 kcal benchmark when considering only food items for which price and quantity information is available, we inflated every food item for which price and quantity information was available by an adjustment coefficient. In the case of Viet Nam, the adjustment coefficient is 1.34. The value of this coefficient is obtained by dividing 2,950 by 2,196, which is the amount of calories yielded from food items for which quantity information is available.[11] By doing so, we were able, in a sense, to artificially increase the quantities consumed by a small factor in order to yield exactly 2,950 kcal (see table 9).

▶ Table 8. Average monthly expenditure, household size and calories per adult equivalent per household, by quintiles, Viet Nam, 2018

Quintile	Total expenses (thousand dong)	Food expenses (thousand dong)	Household size	Calories per adult equivalent (kcal)
1	3 647 *(2 092)*	1 842	3.87	2 534
2	**5 924** ***(1 981)***	**2 748**	**3.76**	**2 973**
3	8 032 *(1 914)*	3 607	3.76	3 280
4	10 751 *(1 779)*	4 562	3.65	3 542
5	19 623 *(1 630)*	6 390	3.49	4 041
Average ***(Total)***	**9 594** ***(9 396)***	**3 829**	**3.71**	**3 274**

Note: The number of observations is indicated in parentheses.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Note that the reference basket is presumed to be an inexpensive way of attaining 2,950 calories, as it reflects the consumption behaviour of relatively poor households in quintile 2 of the expenditure distribution for Viet Nam. In other words, it is likely that richer households will have more expensive ways of consuming 2,950 calories (through more meat, for example).

11 When constructing the reference food basket (composition and consumed quantities), items with no accompanying quantity information were removed from the analysis, since the quantities of such item could not be adjusted in the reference food basket to provide the required calories. As a result, while households in quintile 2 consume an average of 2,973 kcal, they consume only 2,196 kcal when food purchased away from home (for which we have no quantities) is removed from the food basket. Therefore, when adjusting the food basket, the adjustment coefficient is based on 2,196 kcal rather than 2,973 kcal.

The cost per kilocalorie increases with expenditure levels much more than the total daily calorie intake per person, which shows that a higher income/expenditure level translates into a higher quality of food rather than a greater quantity of food.

▶ Table 9. Adjustment of quantities to construct a basket of food items that yields 2,950 kcal per day, Viet Nam, 2018

	Quantity consumed per day, unadjusted (kg)	Calories consumed per day, unadjusted (kcal)	Adjustment coefficient	Quantity consumed per day, adjusted (kg)	Calories consumed per day, adjusted (kcal)
Grain and cereal products	0.41	1 383	1.34	0.56	1 857.28
Meat	0.09	196	1.34	0.12	262.93
Fish and seafood	0.06	46	1.34	0.08	61.43
Vegetables	0.10	111	1.34	0.14	149.09
Fruits	0.04	25	1.34	0.05	33.11
Milk, milk products and eggs	0.20	197	1.34	0.27	264.81
Beverages	0.07	0	1.34	0.09	0.00
Food products	0.05	100	1.34	0.07	134.23
Fat	0.02	139	1.34	0.02	187.11
Food consumed away from home	*0.00*	*0*	*1.34*	*0.00*	*0.00*
Other	*0.00*	*0*	*1.34*	*0.00*	*0.00*
Total	**1.04**	**2 196**	**–**	**1.39**	**2 950**

Note: The numbers presented in this and following tables may not add up precisely to the totals provided owing to rounding. The figures in blue italic correspond to items for which quantities are not available. Food products include fish sauce, salt, MSG, glutamate, sugar, molasses and confectionery.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Step 4: Adjusting the reference food basket to ensure that it covers the requirements for other nutrients, including protein and fat

At this stage, we have the composition of a food basket that is capable of covering the calorie needs of a male adult aged 30–60. In order to ensure that the adjusted food basket fulfils not only the calorie requirements but also other nutritional requirements, in particular the requirements for protein and fat intake, we estimated the nutritional values of the adjusted food basket and compared these with the protein and fat requirements stipulated by the WHO/FAO.

Table 10 shows the amount of protein and fat provided by the adjusted food baskets in Viet Nam for 2018. Table 11 provides information on the threshold values of nutritional requirements in terms of calories, protein and fat. As we can see by comparing our results with these thresholds, the amount of protein provided by the adjusted food basket in Viet Nam exceeds the minimum requirements for protein set by the WHO/FAO and the amount of fat falls within the recommended range. In this case, there is no need to adjust further the quantities of the food basket to fulfil the protein and fat requirements. However, this is not always the case, and sometimes further adjustments are needed in order to ensure that the reference food basket provides not only enough calories but also enough protein and fat for every member of the family.

▶ Table 10. Nutritional values provided by the reference food basket that yields 2,950 kcal per day, Viet Nam, 2018

	Quantity consumed per day, adjusted (kg)	Calories consumed per day, adjusted (kcal)	Protein consumed per day, adjusted (g)	Fat consumed per day, adjusted (g)
Grain and cereal products	0.56	1 857.28	45.39	8.13
Meat	0.12	262.93	19.62	20.46
Fish and seafood	0.08	61.43	12.95	0.89
Vegetables	0.14	149.09	6.51	2.77
Fruits	0.05	33.11	0.49	0.08
Milk, milk products and eggs	0.27	264.81	20.99	19.71
Beverages	0.09	0.00	0.00	0.00
Food products	0.07	134.23	3.30	0.92
Fat	0.02	187.11	0.43	21.63
Food consumed away from home	*0.00*	*0.00*	*0.00*	*0.00*
Others	*0.00*	*0.00*	*0.00*	*0.00*
Total	**1.39**	**2 950**	**110**	**75**

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Note: The figures in blue italic correspond to items for which quantities are not available. Food products include fish sauce, salt, MSG, glutamate, sugar, molasses and confectionery.

▶ Table 11. Threshold values of nutritional requirements

	Calories (kcal)	Protein (g)	Fat (15–35%)	
			Minimum fat (g)	Maximum fat (g)
Threshold	2 950	52.2	49	115

Note: According to the WHO (1985), requirements for fat consumption range between 15 and 35 per cent of calorie consumption. Therefore, for a total calorie consumption of 2,950 kcal per day, 443 to 1,032 kcal should come from fat. As there are 9 kcal in 1 g of fat, we divide the number of kcal to convert these requirements into grams. This gives us a fat consumption requirement of between 49 g and 115 g per day. The protein threshold refers to the safe level of protein intake set by the FAO for an individual weighing 70 kg, which corresponds to the weight selected for the average male adult.

Source: FAO (2010).

In Ethiopia, however, the amount of fat provided by the adjusted food basket failed to meet the requirements set by the FAO/WHO. Table 12 shows the composition and nutritional value of an adjusted food basket capable of covering the calorie needs of a male adult in Ethiopia. It is clear that, while the adjusted food basket provides sufficient protein, the 46.4 g of fat provided is not sufficient to reach the recommended range of 49–115 g of fat. This means that the food basket based on the consumption of households in quintile 2 of the expenditure distribution fails to satisfy all nutritional requirements and therefore cannot be used as the reference food basket.

▶ Table 12. Nutritional values of a reference food basket yielding 2,950 kcal per day, based on quintile 2, Ethiopia, 2018/19

	Quantity consumed per day, unadjusted (kg)	Calories consumed per day, unadjusted (kcal)	Quantity consumed per day, adjusted (kg)	Calories consumed per day, adjusted (kcal)	Protein consumed per day, adjusted (g)	Fat consumed per day, adjusted (g)	Daily price (Ethiopian birr)
Cereals and grain products	0.52	1 826.66	0.58	2 039.41	59.08	20.02	10.32
Pulses and nuts	0.07	211.21	0.08	235.80	16.19	2.91	2.46
Seeds	0.00	9.81	0.00	10.95	0.41	0.81	0.13
Vegetables	0.30	140.69	0.34	157.08	7.80	2.25	3.57
Fruits	0.02	19.16	0.02	21.39	0.25	1.11	0.51
Tubers and stems	0.15	185.34	0.16	206.93	2.46	0.26	2.09
Meat, poultry and fish	0.04	180.58	0.05	201.61	0.35	16.45	1.96
Milk and milk products	0.03	26.84	0.03	29.96	1.75	1.91	1.12
Beverages and stimulants	0.01	37.57	0.01	41.95	1.55	0.68	0.40
Other	0.03	4.41	0.04	4.92	0.04	0.00	3.44
Total	**1.18**	**2 642.26**	**1.32**	**2 950.00**	**89.87**	**46.41**[1]	**26.02**

[1] The 46.4 g of fat provided in this reference food basket is below the recommended range of 49–115 g of fat.

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

In such circumstances, we use a simple method that avoids the need to manually increase or decrease the quantities of food items in order to simultaneously arrive at the desired amount of protein and fat while keeping the calories unchanged, which can be complicated and time consuming. In our method, if the reference food basket does not fulfil the protein and/or fat requirements, we use the average consumption patterns of the next highest quintile to construct a new reference food basket. Since households in the next highest quintile consume more calories than required, we adjust the food basket by decreasing the quantities in order to reach the desired calorie intake (2,950 kcal per adult equivalent). Consequently, in this case, the food basket of households in the next highest quintile (quintile 3) in Ethiopia was selected as a potential reference food basket and was examined to ensure that it satisfied the nutritional requirements once the quantities consumed had been adjusted to provide exactly 2,950 kcal per adult equivalent per day. In our example, as the households in quintile 3 consume more calories than required, we decreased the quantities to reach the desired calorie intake. Since the calorie consumption of quintile 3 is, on average, 3,466.6 kcal – greater than the target of 2,950 kcal – the quantities consumed for each item were reduced by an adjustment coefficient of 2,950/3,466.6 (see table 13). Similarly to the results based on quintile 2, the food basket using quintile 3 also failed to meet nutritional requirements. We therefore used the average consumption patterns of the next highest quintile (quintile 4) to construct a new reference food basket.

▶ Table 13. Nutritional values of a reference food basket yielding 2,950 kcal per day, based on quintile 3, Ethiopia, 2018/19

	Quantity consumed per day, unadjusted (kg)	Calories consumed per day, unadjusted (kcal)	Quantity consumed per day, adjusted (kg)	Calories consumed per day, adjusted (kcal)	Protein consumed per day, adjusted (g)	Fat consumed per day, adjusted (g)	Daily price (Ethiopian birr)
Cereals and grain products	0.67	2 326.95	0.57	1 980.19	57.15	19.56	10.11
Pulses and nuts	0.09	251.74	0.07	214.23	14.55	2.86	2.44
Seeds	0.00	9.09	0.00	7.74	0.30	0.57	0.10
Vegetables	0.36	165.15	0.31	140.54	6.79	1.94	3.39
Fruits	0.02	20.74	0.02	17.65	0.20	0.58	0.46
Tubers and stems	0.22	277.33	0.19	236.00	2.82	0.30	2.69
Meat, poultry and fish	0.06	276.10	0.05	234.96	0.57	18.00	2.39
Milk and milk products	0.04	42.53	0.04	36.19	1.83	2.47	1.36
Beverage and stimulants	0.04	93.04	0.03	79.18	2.95	1.54	0.83
Other	0.05	3.91	0.04	3.33	0.04	0.00	3.52
Total	**1.55**	**3 466.59**	**1.32**	**2 950.00**	**87.20**	**47.83**[1]	**27.28**

[1] The 47.83 g of fat provided in this reference food basket is below the recommended range of 49–115 g of fat.

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

Again, the quantities are reduced by an adjustment coefficient, this time of 2,950/3,967.4, to provide exactly 2,950 kcal. A comparison of table 14 with table 11 shows that the adjusted quantities of the quintile 4 food basket satisfy both the caloric requirement of 2,950 kcal per day per adult equivalent and the nutritional requirements for fat (52.18 g) and protein (88.01 g). The food basket constructed using quintile 4 was therefore selected as the reference for the construction of the food basket for Ethiopia. The cost of the food basket is estimated at around 975.7 Ethiopian birr per month and is approximately 23 per cent more expensive than the food basket for quintile 2, which remains the quintile in which the average calorie intake is the closest to the calorie requirement.

▶ **Table 14. Nutritional values provided by a reference food basket yielding 2,950 kcal per day, based on quintile 4, Ethiopia, 2018/19**

	Quantity consumed per day, unadjusted (kg)	Calories consumed per day, unadjusted (kcal)	Quantity consumed per day, adjusted (kg)	Calories consumed per day, adjusted (kcal)	Protein consumed per day, adjusted (g)	Fat consumed per day, adjusted (g)	Daily price (Ethiopian birr)
Cereals and grain products	0.68	2 377.31	0.50	1 767.68	51.49	16.63	9.75
Pulses and nuts	0.11	318.39	0.08	236.74	15.92	3.46	2.85
Seeds	0.00	10.99	0.00	8.18	0.32	0.61	0.10
Vegetables	0.44	196.75	0.33	146.30	6.88	2.02	3.74
Fruits	0.04	32.59	0.03	24.24	0.28	0.65	0.72
Tubers and stems	0.30	374.99	0.22	278.83	3.30	0.33	3.47
Meat, poultry and fish	0.09	388.88	0.07	289.15	1.75	22.78	3.93
Milk and milk products	0.06	64.15	0.05	47.70	2.66	3.17	1.78
Other	0.06	6.71	0.05	4.99	0.04	0.00	4.13
Beverages and stimulants	0.08	196.63	0.06	146.20	5.36	2.53	1.61
Total	**1.86**	**3 967.39**	**1.39**	**2 950.00**	**88.01**	**52.18**	**32.08**

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

However, the quintile of reference remains the quintile in which the average calorie intake is the closest to the calorie requirement. This is important to keep in mind for the remainder of the methodology, especially when estimating needs with regard to healthcare, education and other essential goods and services, which uses the reference quintile identified on the basis of calorie consumption as a starting point.

Step 5: Estimating the cost of the reference food basket for a reference family size

By multiplying the price of each item by the quantity consumed and then multiplying the obtained cost of the food basket for one person by the reference family size, we are able to provide an estimate of the monthly cost of a food basket that fulfils the nutrient requirements set by the WHO/FAO for a reference family.

To estimate the cost of the reference food basket identified above, we need to calculate the price of each food item. To do this, we divide the actual expenditure of each household on each food item by the quantity of each item consumed by the household. We can then assign to the household an "implicit" price for each food item so that we can estimate the monetary value of monthly food consumption. Once these food prices have been computed at the household level, we calculate the national median price of each item in order to determine the cost of the constructed reference food basket for a male adult equivalent. The results are shown in table 15, from which we can see that the monthly cost of a food basket that satisfies the calorie requirements of a male adult aged 30–60 is approximately 1,021,000 Vietnamese dong.

▶ Table 15. Basket of food items yielding 2,950 kcal per day, Viet Nam, 2018

	Quantity per month (kg)	Calories per month (kcal)	Monetary value per month (thousand dong)	Percentage of total calorie intake	Percentage of total expenditure
Grain and cereal products	16.68	55 718	228	62.96	22.33
Meat	3.65	7 888	327	8.91	32.05
Fish and seafood	2.32	1 843	145	2.08	14.23
Vegetables	4.07	4 473	55	5.05	5.42
Fruits	1.43	993	22	1.12	2.12
Milk, milk products and eggs	8.16	7 944	86	8.98	8.46
Beverages	2.76	0	76	0.00	7.43
Food products	2.13	4 027	55	4.55	5.41
Cooking fats and oils	0.65	5 613	26	6.34	2.55
Food consumed away from home	*0*	*0*	*0*	*0*	*0*
Other	*0*	*0*	*0*	*0*	*0*
Total	**41.85**	**88 500**	**1 021**	**100.00**	**100.00**

Note: The figures in blue italic correspond to items for which quantities are not available. Food products include fish sauce, salt, MSG, glutamate, sugar, molasses and confectionery.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

At this stage, we have the cost of an adequate food basket capable of covering the needs of a male adult aged 30–60 years. However, this does not provide any insight into the estimated food costs of households or family structures. Family size and composition are an important consideration in the calculation because the needs of families vary significantly depending on the family size considered. In order to investigate how the food needs of families vary when different household sizes are considered, we estimated the needs of different sizes of families. In the context of wage setting, it may be valuable to be able to provide a range of estimates for different family sizes.

Now that we have the monthly cost of an adequate food basket for a male adult equivalent, we need to multiply the estimate by the number of male adult equivalents in the family in order to determine the cost of the basket for different family sizes. For this purpose, the average number of male adult equivalents living in each size of family is estimated using the household expenditure survey. For example, table 16 shows how each family size, ranging from one to four members, is associated with the average number of adults living in the family in Viet Nam.

▶ Table 16. Average number of male adult equivalents for various household sizes, Viet Nam, 2018

Household size (number of members)	1	2	3	4
Average number of male adult equivalents	0.82	1.7	2.6	3.34

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

With this information, the needs of the different family sizes considered can be estimated. As seen in table 17, the estimated monthly cost of a food basket yielding sufficient calorie requirements and protein and fat requirements varies from 837,000 dong for a family of one to 3,411,000 dong for a family of four.

▶ Table 17. Monthly cost of an adequate food basket for selected family sizes, according to the number of male adult equivalents, Viet Nam, 2018

Household size (number of members)	Monthly cost of food basket per day for an adult male (thousand dong)	Average number of male adult equivalents per household	Monetary value per month by household size (thousand dong)
1	1 021	0.82	837
2	1 021	1.70	1 736
3	1 021	2.60	2 654
4	1 021	3.34	3 411

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Nevertheless, while accounting for a range of family sizes is valuable, the crucial question remains: how many family members should be considered when estimating the needs of workers and their families? This is an important question, as a wage to support a family of four evidently needs to be higher than a wage to support a family of three. Ultimately, the decision as to what family size to adopt should be left to the discretion of the tripartite entity interested in applying a living wage in its particular setting. However, in our baseline model, we propose using the national average family size as a starting point. In order to remain pragmatic and ensure that our estimates sufficiently reflect the needs of workers for a realistic family size, the methodology proposes that the national average family size should be rounded up to the nearest whole number. It should be noted that the AEEI scale is used to convert the number of persons in this family of reference into adult equivalents.

It is interesting to note that poorer populations tend to have larger families, which may translate into greater needs. For instance, as seen in table 18, in Viet Nam household size decreases as the quintile level increases, from 3.87 (3.11 male adult equivalents) for quintile 1 to 3.49 (2.93 male adult equivalents) for quintile 5, with a national average of 3.71 (3.05 male adult equivalents).

▶ Table 18. Average household size, and average household size in male adult equivalents, per quintile, Viet Nam, 2018

Quintile	Average household size	Average household size using AEEI
1	3.87	3.11
2	3.76	3.06
3	3.76	3.10
4	3.65	3.04
5	3.49	2.93
Average	**3.71**	**3.05**

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam , GSO 2018).

Accordingly, when applying our proposed baseline methodology in Viet Nam, we find that the reference family size corresponds to a family of four (rounded up from the national average of 3.71). Using the AEEI scale, the cost of food for a family of four in 2018 corresponded to that of 3.34 male adult equivalents in terms of calorie requirements (see table 16). The results of this analysis for a family of four are shown in table 19. The cost of a food basket that meets the calorie, protein and fat requirements for a family of four in Viet Nam in 2018 is estimated to be 3,411,000 dong.

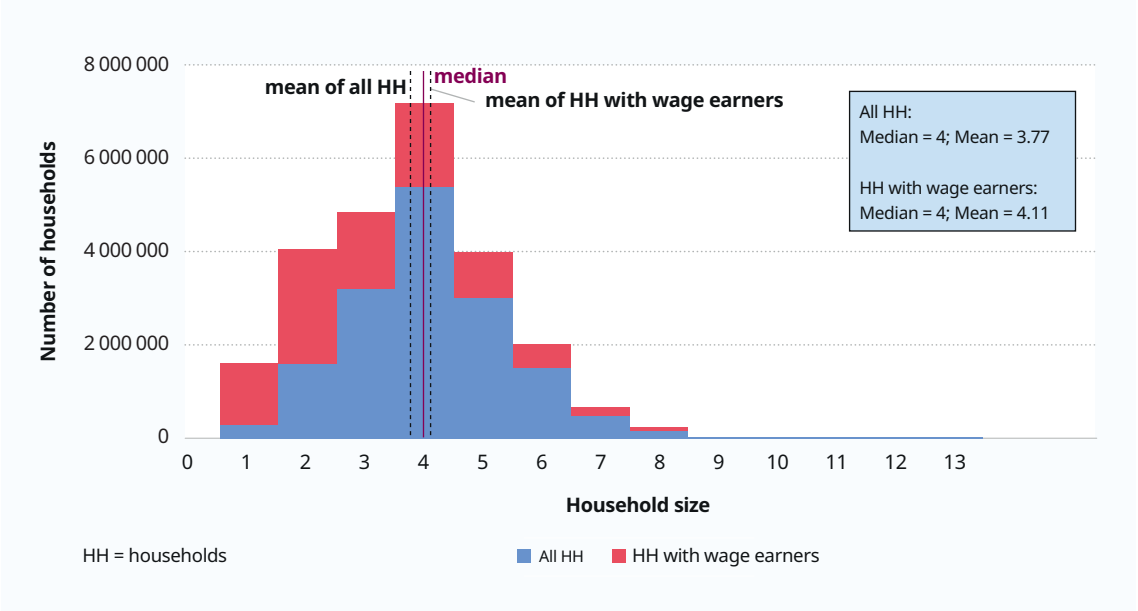
▶ Table 19. Monthly cost of an adequate food basket for a family of four, according to the average number of male adult equivalents, Viet Nam, 2018

Monthly cost of a food basket that yields 2,950 kcal per day (thousand dong)	Average number of male adult equivalents per household	Monthly cost of an adequate food basket for a family of four (thousand dong)
1 021	3.34	3 411

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

It should be noted that one possible option when selecting the household size is to restrict the sample to those households with at least one wage earner. In the case of Viet Nam, such an approach would not have made much of a difference. Figure 3 compares the distribution of households by size for the total population and for households with at least one wage earner, and the results are quite similar. In both cases, the median household size is four, and more than two thirds of households have three to five members.

▶ Figure 3. Distribution of households by size, Viet Nam, 2016



Note: All households (*N* = 25,070,766); households with wage earners (*N* = 16,202,065).

Source: ILO calculation from the 2016 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2016).

Validation, possible adjustments, and discussion of alternative methods

In the case of Indonesia, one adjustment needed to be made with regard to calorie requirements. Following a validation process at national level, we decided to use the national health authorities' recommendations for calorie requirements, instead of those issued by the FAO/WHO. Following the baseline methodology described in the previous sections, we initially used the FAO/WHO recommendations of 2,950 kcal per day per male adult equivalent, based on our assumption of a moderate physical activity level and an average weight of male and female individuals of 70 kg and 65 kg, respectively. However, in practice, only the calorie consumption of the highest quintile (quintile 5) of the expenditure distribution was close to those requirements, as shown in table 20. Therefore, in the case of Indonesia, only the wealthiest households in the population would manage to access an adequate diet when measured against the FAO/WHO recommended caloric and nutrient intakes.

▶ **Table 20. Average monthly household expenditure, household size and calorie intake per male adult equivalent, by quintile, Indonesia, 2018**

Quintile	Total expenditure (Indonesian rupiah)[1]	Food expenditure (Indonesian rupiah)[1]	Average household size	Calorie intake per male adult equivalent (kcal)
1	1 813 462 *(55 859)*	1 203 575	4.87	2 179
2	2 761 366 *(56 547)*	1 743 363	4.74	2 466
3	**3 693 764 *(60 435)***	**2 201 267**	**4.51**	**2 645**
4	5 049 354 *(62 766)*	2 782 071	4.27	2 835
5	9 801 709 *(59 548)*	3 916 804	4.07	3 034
Average *(Total)*	**4 623 920 *(295 155)***	**2 369 412**	**4.49**	**2 631**

Note: The number of observations is indicated in italic and parentheses. [1] Nominal values.

Source: ILO estimates based on the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

The disparity between the calorie consumption of households and the recommendations used in our baseline methodology may be partly explained by the lower average weight of male and female individuals in Indonesia. In light of these findings and after discussions with various experts, it was decided to use the recommendations produced by the national health authorities, which are lower and, in this case, more realistic. The Ministry of Health of Indonesia recommends that each individual should consume at least 2,150 kcal, including 57 g of protein, per day. It should be noted that, contrary to the FAO/WHO recommendation of 2,950 kcal per day per adult equivalent, the recommendations produced by the Indonesian health authorities do not use an equivalency scale to determine the food and calorie requirements for workers and their families. Our analysis of food expenditure for households in Indonesia was therefore conducted using per capita values.

▶ **Table 21. Average monthly household expenditure, household size and calorie intake per capita, by quintile, Indonesia, 2018**

Quintile	Total expenses (Indonesian rupiah)[1]	Food expenses (Indonesian rupiah)[1]	Household size	Calories per capita (kcal)
1	1 813 462 *(55 859)*	1 203 575	4.87	1 736
2	2 761 366 *(56 547)*	1 743 363	4.74	1 990
3	**3 693 764 *(60 435)***	**2 201 267**	**4.51**	**2 157**
4	5 049 354 *(62 766)*	2 782 071	4.27	2 333
5	9 801 709 *(59 548)*	3 916 804	4.07	2 517
Average *(Total)*	**4 623 920 *(295 155)***	**2 369 412**	**4.49**	**2 147**

Note: The number of observations is indicated in italic and parentheses. [1] Nominal values.

Source: ILO estimates based on the 2018 *Indonesia National Socio-Economic Survey* (Indonesia, Statistics Indonesia 2018).

As seen in table 21, which is based on the recommendations provided by the Ministry of Health of Indonesia, the reference quintile corresponds to quintile 3, in which calorie consumption is the closest to the target of 2,150 kcal per day per capita.

This example shows the importance of completing all the validation steps, including holding consultations with social partners and key experts to improve the relevance of the estimates and allow country-specific adjustments to be made, rather than applying the methodology mechanically. By taking such a flexible approach in a wage-setting context, the proposed methodology aims to provide a set of estimates that take into account the circumstances of each country and ultimately supports social dialogue in a manner acceptable to both the national authorities and social partners.

An alternative methodology tested in Viet Nam and Indonesia

An alternative approach for estimating the cost of an adequate food basket was also tested. As per the normative approach and in a similar vein to our first method, the starting point is to define and apply the recommended nutritional requirements, such as those proposed by the FAO. Once these have been set, the next step is to identify an income group that reaches the desired level of food consumption in terms of daily calories, protein and fat intake per adult equivalent and then to calculate the average cost per calorie for this income group in order to quantify their food needs in monetary terms. In this case, the average cost per calorie of the reference income group is multiplied by the daily calorie requirements for an adult equivalent in order to produce an estimated food cost:

$$\textit{Monthly cost of food} = \textit{daily kcal requirement per adult eq.} \times \textit{average cost per kcal} \times \frac{365}{12}$$

The estimated individual food cost is then converted into monthly figures and multiplied by the reference family size in order to calculate the monthly cost of an adequate food basket for a household.

The key departure from the baseline methodology described above is that this alternative approach offers a slightly simpler and easier way to estimate the cost of the food basket. With this alternative approach, instead of estimating the price of each food item separately, we simply estimate the average price of 1 kcal and multiply it by the daily calorie recommendation. Therefore, while the baseline methodology provides a detailed food basket that includes all the food items in specific quantities, this alternative methodology provides only a notional monetary value associated with the daily consumption of the required number of calories. Therefore, while this alternative methodology may be simpler and easier to apply, it has some limitations; in particular, it is impossible to know if the notional monetary value obtained allows for a food basket that provides a sufficient amount of protein and fat.

▶ Table 22. Decile distribution of calorie intake per male adult equivalent and per capita and average price per kcal, Viet Nam, 2018

Decile	Per capita	Adult equivalent			Average price per kcal (dong)	Observations
	Calorie intake (kcal)	Calorie intake (kcal)	Protein (g)	Fat (g)		
1	1 874	2 378	83	52	7.62	1 067
2	2 150	2 691	99	64	9.51	1 025
3	**2 328**	**2 894**	**109**	**70**	**10.57**	**993**
4	2 490	3 052	116	77	11.21	988
5	2 641	3 221	125	81	12.28	970
6	2 743	3 340	132	87	13.39	944
7	2 837	3 424	138	91	14.67	915
8	3 038	3 659	149	100	16.03	864
9	3 147	3 764	156	104	18.44	836
10	3 625	4 318	185	124	21.00	794
Average	**2 687**	**3 274**	**129**	**85**	**13.47**	**9 396**

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Viet Nam

The following is an example of how this alternative methodology may be applied using data from the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018). As noted above, food consumption is defined in a normative manner on the basis of the recommended dietary guidelines proposed by the WHO/FAO for a male adult aged 30–60, namely 2,950 kcal per adult per day for energy, 52.2 g of protein and at least 49 g of fat. As shown in table 22, it was found that all the requirements were fulfilled between expenditure deciles 3 and 4. The average calorie cost per adult was taken from decile 3 and is equal to 10.57 dong per kcal.

Once the decile was defined, we proceeded to estimate the monthly cost of food for an adult equivalent. To do so, we took the recommended calorie intake and multiplied it by the cost of 1 kcal for those households whose food consumption was the closest to the minimum adequate basket. Since the values mentioned above are daily values, we converted them to monthly costs by multiplying them by 365/12, as follows:

$$\textit{Monthly cost of an adequate food basket} = 2{,}950 \text{ kcal} \times 10.57 \text{ dong} \times \frac{365}{12} = 948{,}437 \text{ dong}$$

▶ **Table 23. Comparison of baseline and alternative methodologies for estimating individual and family monthly costs of an adequate food basket, Viet Nam, 2018**

	Monthly cost of an adequate food basket for an individual (thousand dong)	Average number of adult equivalents per household	Monthly cost of an adequate food basket for a family of four (thousand dong)
Baseline methodology	1 021	3.34	3 411
Alternative methodology	948	3.34	3 167

Note: Estimates refer to a family of four.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

As shown in table 23, the estimated costs for a family of four calculated using this alternative method are similar to the estimated costs calculated using the baseline methodology (3,167,000 dong versus 3,411,000 dong, with the latter being 7.7 per cent higher). One key reason for this small discrepancy is that the alternative methodology uses a notional price per kcal, taking the simple average of the price per kcal of all food items. The baseline methodology, in contrast, takes into account the actual quantities consumed of each food item and applies their respective prices when calculating the cost of the reference food basket.

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Indonesia

The following is another example of how this alternative methodology can be used to provide an approximate calculation of the aggregated food needs of workers in Indonesia, using data from the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018). In the case of Indonesia, the recommended dietary allowance set by the Ministry of Health is 2,150 kcal, 57 g of protein and 48–84 g of fat per person per day. We decided to use the nutritional values distributed at the per capita level, as the recommendations were given per person while the decile distribution was calculated using the monthly expenditures per adult equivalent. As seen in table 24, decile 5 of the expenditure distribution is the closest to the recommended intake for both energy and protein, while decile 4 meets the intake requirements for fat. The cost per calorie in decile 4 is 6.69 Indonesian rupiah, while the cost per calorie for decile 5 is 7.44 rupiah.

As with Viet Nam, the average cost per calorie was chosen from the first decile that fulfilled both the energy (calories) and nutrition (protein) requirements; therefore, decile 5 was adopted.

The formula to be applied is as follows:

$$\textit{Monthly cost of an adequate food basket} = 2{,}150\ \text{kcal} \times 7.44\ \text{rupiah} \times \frac{365}{12} = 486{,}545\ \text{rupiah}$$

As shown in table 25 and similarly to the Viet Nam case, the estimated costs for a family of four in Indonesia calculated using the baseline methodology and the alternative methodology are similar (1,915,708 rupiah versus 1,946,180 rupiah, respectively, with the former being 1.6 per cent lower than the latter).

▶ Table 24. Decile distribution of average calorie intake per capita and average price per kcal, Indonesia, 2018

Deciles	Calorie intake (kcal)	Protein (g)	Fat (g)	Average price per calorie (rupiah)	Number of observations
1	1 634	43	35	4.41	27 875
2	1 839	49	42	5.37	28 013
3	1 951	53	46	6.05	27 679
4	2 030	56	50	6.69	28 850
5	**2 112**	**59**	**53**	**7.44**	**29 733**
6	2 205	63	57	8.25	30 705
7	2 291	66	60	9.17	31 126
8	2 385	71	65	10.26	31 810
9	2 464	76	70	11.90	30 889
10	2 561	84	76	14.68	28 475
Average	**2 147**	**62**	**55**	**8.42**	**295 155**

Source: ILO estimates based on the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

▶ Table 25. Comparison of baseline and alternative methodologies for estimating individual and family monthly costs of an adequate food basket, Indonesia, 2018

	Monthly cost of an adequate food basket for an individual (rupiah)	Monthly cost of an adequate food basket for a family of four (rupiah)
Baseline methodology	478 927	1 915 708
Alternative methodology	486 545	1 946 180

Source: ILO estimates based on the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

3 The cost of decent housing: A normative approach

3. The cost of decent housing: A normative approach

After food, housing is typically the largest expenditure group for workers in developing countries (Anker and Anker 2017). And for good reason, as the lifestyle and well-being of family members are significantly influenced by the quality of their dwelling.

Adequate and decent housing is a universal human right, recognized at the international level and in more than 100 national constitutions throughout the world. A secure place to live is also intrinsic to human dignity and to physical and mental health. According to Habitat for Humanity (n.d.), decent housing has the capacity to remove barriers to opportunity, success and health and, more generally, to improve individuals' quality of life. As a result, ensuring access to adequate, safe and affordable housing is a key priority of the 2030 Agenda for Sustainable Development. This objective is perhaps most explicitly reflected in Sustainable Development Goal 11, on making cities and human settlements inclusive, safe, resilient and sustainable.

Globally, however, inadequate housing remains widespread. It is estimated that 3 billion individuals (40 per cent of the global population) do not have access to adequate housing. What is more, this figure continues to grow, as an estimated 96,000 new dwellings are needed every day (UN-Habitat, n.d.). Moreover, millions of people worldwide live in extremely poor living conditions, such as overcrowded and informal settlements. When looking at whether wages are sufficient to afford a decent standard of living, it is therefore necessary to take into account the cost of decent housing.

In this section, we introduce our methodology for estimating housing expenditure. Using a scoring system based on international housing criteria, we calculate the following separately:

- **Rent:** The monthly cost of a dwelling based on available rental information.
- **Utilities:** The monthly cost of household utilities, including the cost of water, energy and waste removal.

Once the two housing cost components have been computed, we can add them together to produce an estimated total cost of decent housing.

To estimate the cost of adequate housing for a city, region or country, the methodology seeks to determine what constitutes decent housing. One way to do this is to devise and implement a scoring system based on the characteristics that determine the quality of housing. This information is typically obtainable from household income and expenditure surveys. We then use the relationship between the housing quality score and the cost of rent and utilities to estimate the cost of decent housing, as defined by national and international standards for adequate housing. To do this, we perform the following steps:

1. Select indicators to assess the quality of housing.
2. Apply a scoring system to assess the quality of housing.
3. Estimate the cost of housing for each housing quality score.
4. Identify the score that corresponds to decent housing.
5. Identify the cost of rent corresponding to the minimum decent housing score.
6. Identify the cost of utilities corresponding to the minimum decent housing score.
7. Estimate the total cost of decent housing (rent plus utilities) for a reference family size.

Each of these seven steps are discussed in turn below, with examples of how they were applied in the pilot countries. Finally, the results obtained through the application of this baseline methodology are compared with the median expenditure on rent and utilities.

Step 1: Select indicators to assess the quality of housing

The first step consists of selecting the indicators needed to identify the quality level of a dwelling. This step is essential, as it must take into consideration the information gathered through the income and expenditure survey used for the analysis, as well as normative recommendations as to what should be considered when assessing the decency of a dwelling. The methodology is based on four of the five key dimensions used by UN-Habitat (the United Nations agency mandated to promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all) in its definition of what constitutes a slum, which is the most widely used definition worldwide. The dimensions used in this definition appear to be the most adequate for assessing the decency of a house and, by contrast, determining what constitutes a slum. According to this definition, a slum consists of a household or a group of people living under the same roof and lacking one or more of the five characteristics listed in figure 4. Unfortunately, information regarding tenure security is often unavailable in income and expenditure surveys. Therefore, in an effort to build a methodology that is applicable to a large number of countries, this baseline method focuses on four out of the five categories: the durability of the dwelling, the living space, access to safe water and access to sanitation facilities. However, if information on tenure security is available, it is recommended that it be included in the analysis.

▶ Figure 4. Five key dimensions for identifying slums

Durability of dwellings	**A dwelling is considered durable if it is built on a non-hazardous location and has a structure that is permanent and adequate enough to protect its inhabitants from the extremes of climatic conditions, such as rain, heat, cold and humidity.**
Sufficient living area	**A dwelling is considered to provide a sufficient living area for the family members if not more than three people share the same room.**
Access to safe water	**A household is considered to have access to improved water supply if it has sufficient amounts of water for family use, at an affordable price, available to household members without extreme effort, especially for women and children.**
Access to sanitation	**A household is considered to have adequate access to sanitation if an excreta disposal system, in the form of either a private toilet or a public toilet shared with a reasonable number of people, is available to household members.**
Tenure security	**A household is considered to have secure tenure if the household members have de facto or de jure secure tenure status and protection against forced eviction.**

Source: UN-Habitat (2006, 2011, 2014).

Conveniently, income and expenditure surveys generally include a housing module in their questionnaire, which seeks to collect information on the characteristics and cost of dwellings and the cost of utilities. For instance, the results of living standards measurement surveys carried out under the World Bank's flagship household survey programme are available for a very large number of low- and middle-income countries and include a wide range of information on housing, including the type of dwelling, the construction materials used for the walls, roof and floor, the number of rooms, the availability of electricity, the source of drinking water, the type of toilet and the type of kitchen (World Bank, n.d.a).

Figure 5 shows how the relevant indicators or variables are identified for each dimension. For example, to assess the durability of a dwelling, information could be sought regarding the materials used for the walls, roof and floor, while the number of persons per room can be used to assess the living space. However, it is important to acknowledge that, although most income and expenditure surveys provide information on housing characteristics, questionnaires may differ by country, resulting in discrepancies across countries in the number and type of variables employed to estimate decent housing. Even though there are often multiple variables available to capture the quality of certain dimensions (such as availability of facilities and durability), for others only one variable may be available (such as for living space or access to water). Table 26 summarizes the variables selected in each of the pilot countries to assess the quality of housing in respect of each of the four dimensions identified by UN-Habitat, as mentioned above. As can be observed, the number of variables available for each dimension varies from country to country. For instance, in terms of living space, while information on the number of square metres per person and the number of persons per room was available for Costa Rica and Indonesia, information on only one of these two variables was available for Ethiopia and Viet Nam. Similarly, while in Costa Rica information was available on six variables relating to both the type and quality of materials used in the construction of the walls, roof and floor, only two such variables (providing information on the construction materials used for the walls and floor) were available for Viet Nam.

▶ Table 26. Housing variables available for each dimension in the four pilot countries

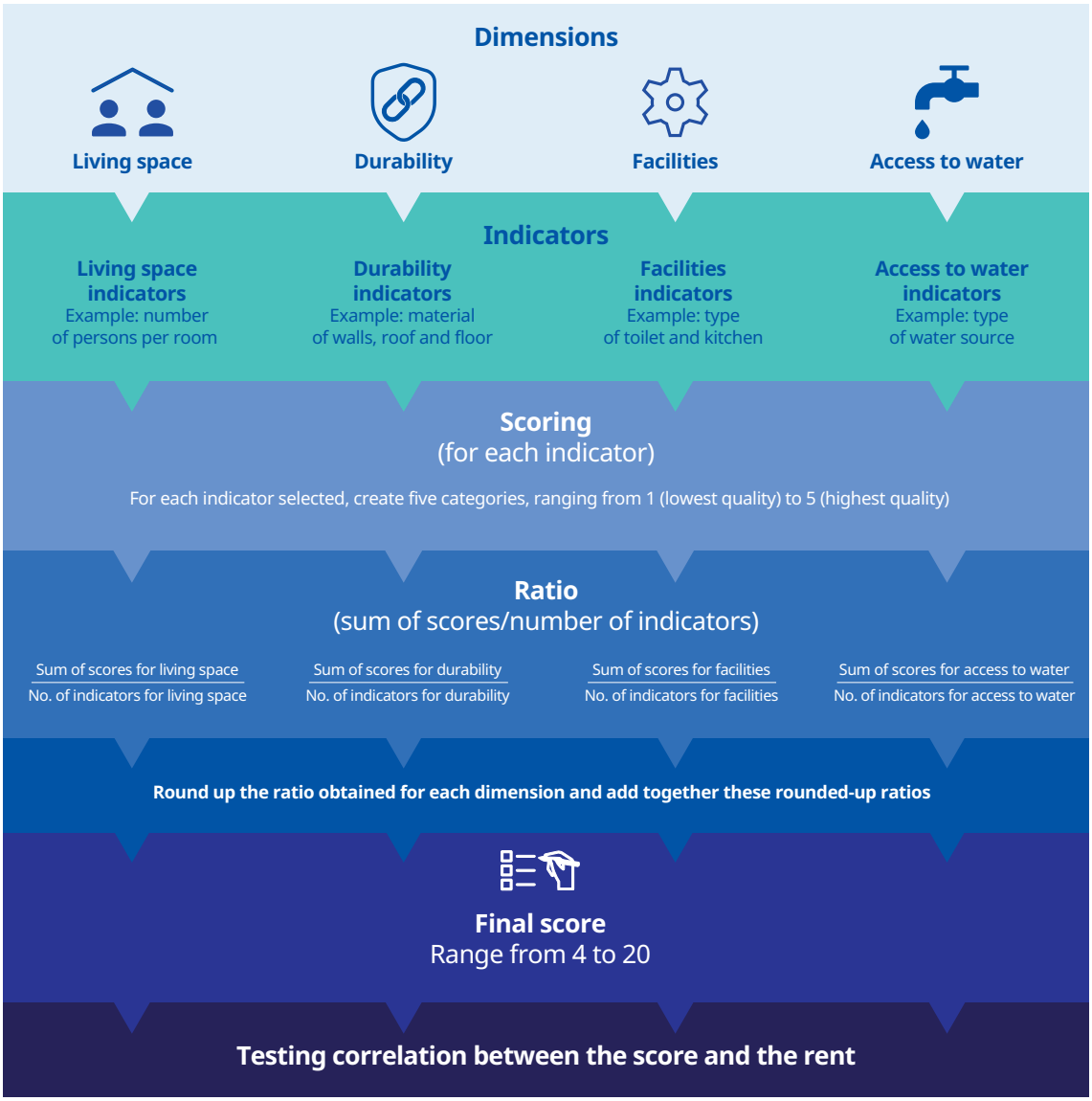
	Costa Rica (2018)	Ethiopia (2018/19)	Indonesia (2018)	Viet Nam (2018)
Space	▶ m^2 per capita ▶ Persons per room	▶ Persons per room	▶ m^2 per capita ▶ Persons per room	▶ m^2 per capita
Durability	Material used for: ▶ Walls ▶ Floor ▶ Roof Quality of each material: bad, average or good	Material used for: ▶ Walls ▶ Floor ▶ Roof	Material used for: ▶ Walls ▶ Floor ▶ Roof	Material used for: ▶ Walls ▶ Roof
Facilities	Bathroom: ▶ Disposal	Bathroom: ▶ Type of toilet Kitchen: ▶ Type of kitchen	Bathroom: ▶ Type of toilet ▶ Disposal	Bathroom: ▶ Type of toilet
Access to water	▶ Source ▶ Pipes	▶ Source	▶ Source	▶ Source ▶ Pipes

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

Step 2: Apply a scoring system to assess the quality of housing

In step 2, the indicators selected in step 1 are used to create a scoring system in which every dwelling in the database is given a score from 4 to 20, according to its level of quality. The scoring system is designed to give a score of 4 to the lowest-quality dwellings and a score of 20 to the highest-quality dwellings. The application of this scoring system method is summarized in figure 5.

▶ **Figure 5. Scoring system for assessing the quality of housing**



Source: ILO, own elaboration.

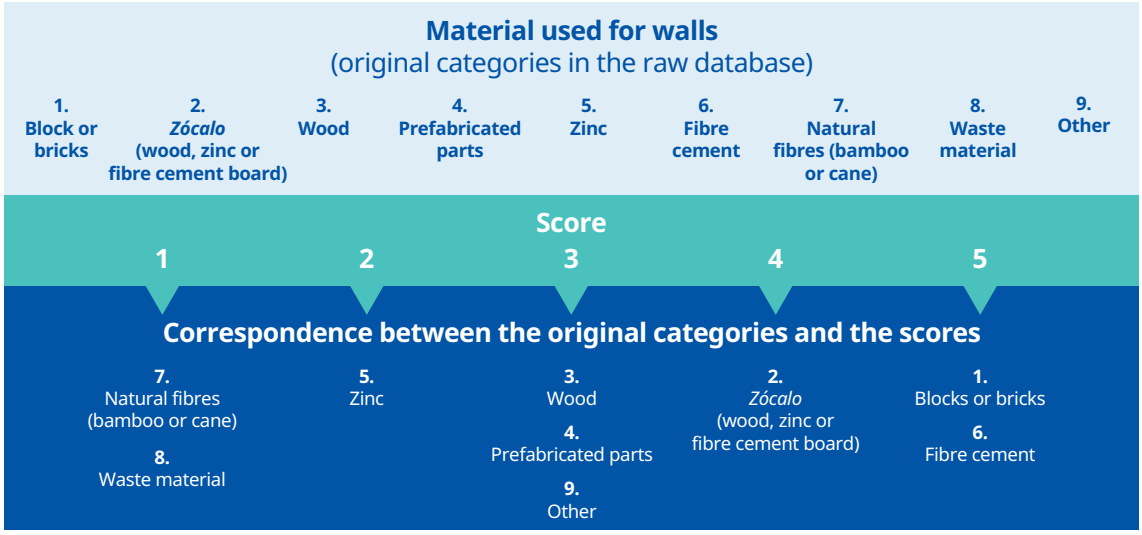
As shown in figure 5, after identifying the relevant indicators for each dimension of housing quality, the scoring system requires that, for each selected indicator, a score should be assigned from 1 to 5, with 1 corresponding to the lowest level of quality and 5 to the highest level of quality.

Two examples of this scoring system are provided in figures 6 and 7. Figure 6 illustrates the scoring of the quality of wall materials in Costa Rica, and figure 7 illustrates the scoring of the quality of access to water in Ethiopia. In Costa Rica, for instance, nine different types of building materials were identified. The scoring process resulted in materials Nos 7 and 9 being ranked as the lowest-quality building materials for walls (score of 1). At the other end of the scale, material No. 1 (blocks or bricks) was considered the best building material (score of 5). In Ethiopia, 17 different forms of access to water were identified. The highest-quality form of access to water was No. 1, "piped water in the dwelling" (score of 5), while the lowest-quality forms were Nos 10, 11, 14, 16 and 17 (score of 1).

While based on the guidelines provided by UN-Habitat, this part of the methodology may, in some cases, carry a degree of subjectivity, since it requires judgement calls to be made on how to rank housing characteristics. While for some variables, such as the number of persons per room, the classification is relatively straightforward (because the more space/room(s) per person the better), for other indicators, such as the material used for construction, it may be more challenging to apply the methodology. For example, when assessing the quality of wall materials in Costa Rica (figure 6), although blocks and bricks are clearly better building materials than bamboo or cane, it may be challenging to classify the intermediary categories, such as wood, prefabricated parts or *zócalo* board. At the same time, these factors are country specific, as the housing characteristics available in one country are likely to differ from those commonly found in another country. This is why, in some cases, complementary information from secondary sources and publications specific to the country context are used to rank the category in a more reliable manner. For example, in Costa Rica, a recent study by Guevara and Arce (2016) was used to better understand the quality of each material used in construction.

Once a score has been calculated for all the selected indicators, we can assign a score from 1 to 5 (lowest to highest quality) to all the variables. Table 27 summarizes the system used to score the selected variables for Ethiopia. In Ethiopia, there were three variables for evaluating the durability of a given dwelling, to which a score from 1 to 5 was given. For roof materials, "natural sources" was classified as having the lowest level of durability (score of 1) and "cement" the highest (score of 5). Regarding water access, "no facilities" is the lowest ranked, while "piped water in the dwelling" provides the best access and is therefore given a score of 5. More than five persons occupying the same room in a dwelling was the lowest-ranked

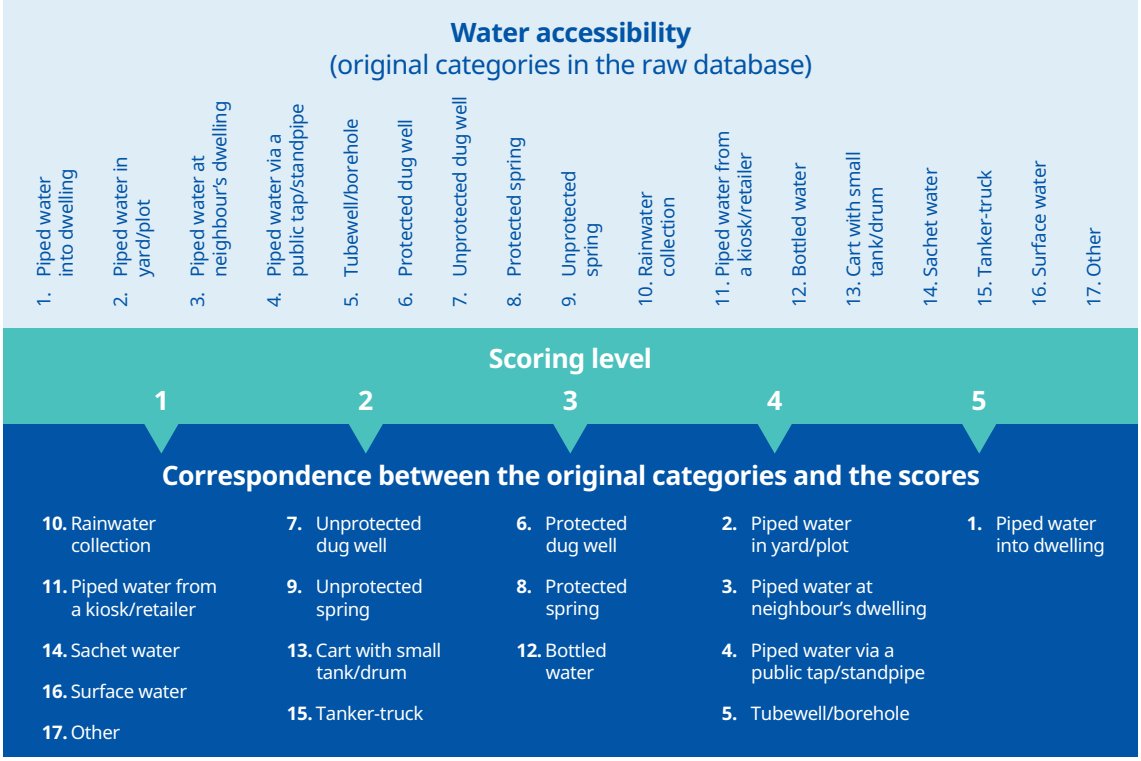
▶ **Figure 6. Scoring the quality of wall materials, Costa Rica, 2018**



Source: ILO, own elaboration, based on the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018).

form of living space (score category 1), while an occupancy level of fewer than 1.3 persons per room was the highest ranked (score of 5).

▶ **Figure 7. Scoring the quality of water access, Ethiopia, 2018/19**



▶ **Table 27. Scoring the quality of different housing dimensions/variables in Ethiopia, 2018/19**

Coding system[1] (score)	Housing dimensions						
	Living space	Durability			Facilities		Access to water
	No. of persons per room	Material used for walls	Material used for roof	Material used for floor	Toilet	Kitchen	Source
1	More than 5	Natural sources[2]	Natural sources	Natural sources	No facilities	No kitchen	No facilities[3]
2	Between >3 and 5	Metal material[4]	Wood[5]/plastic	Wood	Pit latrine with no slab	N/A	Unprotected source[6]
3	Between >2 and 3	Wood	Metal	Plastic	Pit latrine with slab	Traditional	Piped water in public space
4	Between >1.3 and 2	Stone/asbestos	Asbestos[7]	Bricks/cement	Pit latrine, ventilated	N/A	Piped water near the dwelling
5	Equal to or less than 1.3	Blocks[8]	Cement[9]	Ceramic/marble	Flush toilet	Modern	Piped water in the dwelling

[1] Coding system: 1 (lower quality) to 5 (higher quality). [2] Natural sources: bamboo, mud, reed, thatch or dung. [3] No facilities: reliant on rain, spring or surface water. [4] Metal: iron sheets or zinc. [5] Wood: wood-based material. [6] Unprotected source: dug well, well or tanker-truck. [7] In Ethiopia, only 0.4 per cent of households have roofs made of asbestos. However, in future applications of the methodology, it would be appropriate to reconsider the classification of asbestos in terms of material quality, given the serious health and safety hazards associated with exposure to asbestos fibres. [8] Blocks: non-plaster or plaster with cement. [9] Cement: screed and tiles, or concrete.

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

In the next stage of step 2, we add together the scores obtained in each dimension to create the final score attributed to each dwelling in the database. However, as has been mentioned before, given the varying availability of indicators in the database, some dimensions may include multiple variables while others may include only one variable. If we were to add together all the scores obtained for each variable independently, this would give more weight to dimensions that are based on more variables. Therefore, in order to give equal weight to each dimension, irrespective of the number of indicators available in the database, we apply the following formula, which divides the sum of the scores obtained for each dimension by the number of indicators for the dimension:

$$\textit{Final Score} = \frac{\textit{Sum of scores for living space}}{\textit{Number of variables for living space}} + \frac{\textit{Sum of scores for durability}}{\textit{Number of variables for durability}} + \frac{\textit{Sum of scores for facilities}}{\textit{Number of variables for facilities}} + \frac{\textit{Sum of scores for access to water}}{\textit{Number of variables for access to water}}$$

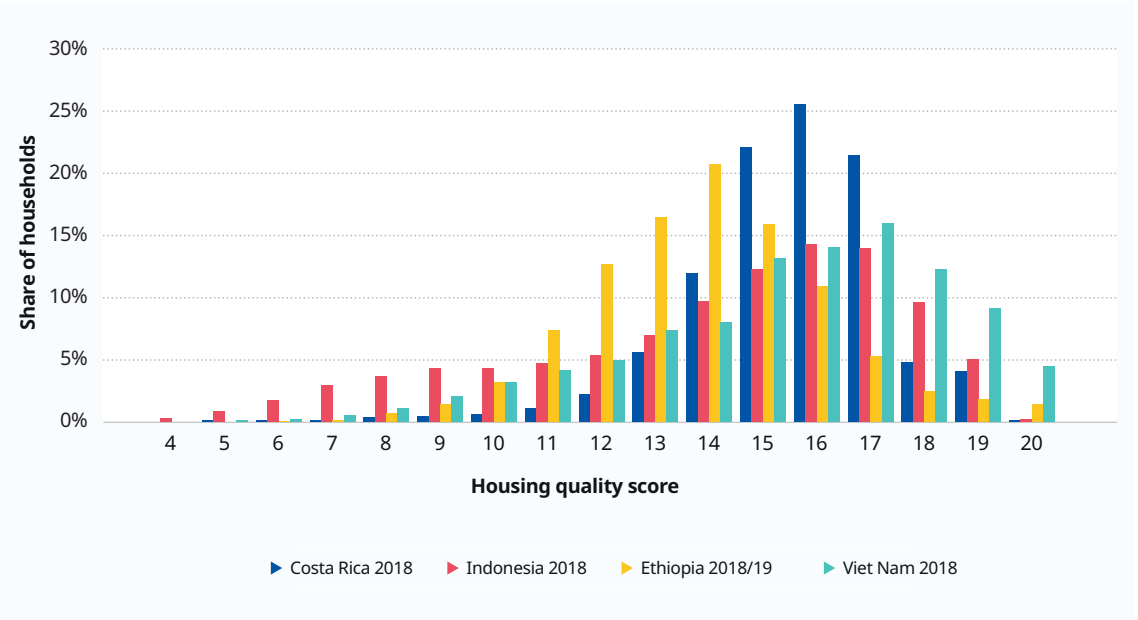
The final stage of the scoring system consists of rounding up the sum total to produce a final score, which must be a whole number between 4 and 20. To take an example from Ethiopia, a dwelling with three persons per room, walls made of stone, a roof made of iron sheet, a floor made of plastic, a ventilated pit latrine for a toilet, a traditional kitchen and access to piped water in a public space would be given a final score of 12.8 (see table 27 above and the formula below). However, to avoid producing a continuous variable for the final score or a multiplicity of scores, we round the total up to the next whole number – in this case, the score of 12.8 is rounded up to 13.

$$\textit{Final Score} = \frac{3}{1} + \frac{4+3+3}{3} + \frac{4+3}{2} + \frac{3}{1} = 12.8 \longrightarrow \mathbf{13}$$

We have now attributed a final housing quality score from 4 to 20 to each dwelling in the database. The final scores rank the quality of housing from 4 (the minimum score) to 20 (the maximum score). Note that, for any given score, various combinations of housing characteristics are possible. A caveat to this approach is that it allows for compensation. This means that, even though a dwelling may not have access to sanitation – which would technically classify it as a slum – it can still achieve an adequate score by performing very well in other dimensions. However, we assume that there are trade-offs between dimensions and that households can, in principle, choose to reduce the quality of one dimension in exchange for improvements in another without increasing their housing budget.

Figure 8 shows the distribution of dwellings according to the final housing quality scores in the pilot countries. As we can see in Costa Rica, for instance, most dwellings obtain a housing quality score between 15 and 17, with more than two thirds of dwellings (69 per cent) falling into this range. By contrast, in Ethiopia, most dwellings have a score of 14. These variations reflect differences in economic development between countries and the possibility that what may be viewed as decent housing in one country may be viewed differently in another.

▶ **Figure 8. Distribution of households across housing quality scores in the pilot countries**



Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

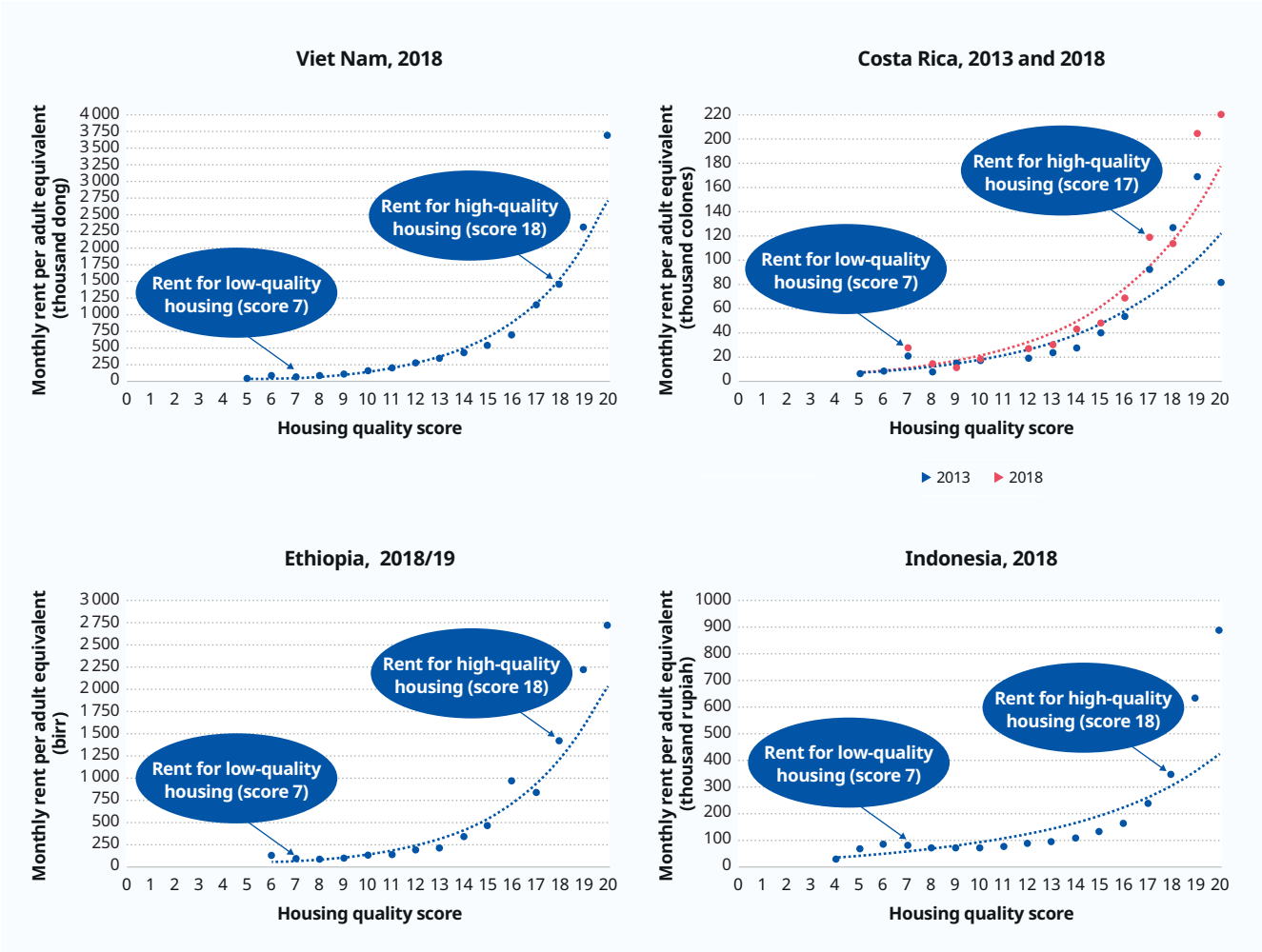
Step 3: Estimate of the cost of housing for each housing quality score

The next step of this methodology rests on the assumption that the quality of housing is the main determinant of the cost of a dwelling and, therefore, that the two variables should exhibit a strong positive correlation.[12] In order to test this assumption, we first estimate the average cost of rent divided by the number of adult equivalents in the family (using the OECD/Oxford scale) for each score level. For instance, for a given score (say 4), we calculate the average rent per adult equivalent of all the dwellings that have been assigned a final score of 4. Second, we plot the obtained average cost of rent at each score level to determine whether they exhibit a positive relationship (see figure 9). As the cost of housing consists of both rent and the cost of utilities, this procedure is also carried out for the cost of utilities, including the sum of expenditure on water, electricity and telephone services (see figure 10). Box 2 provides an explanation of what to do when rent information is unavailable or limited.

As we can see in figure 9 – in which the vertical axis indicates the monthly rent level and the horizontal axis the final housing quality score – in all the pilot countries, the cost of rent shows a strong positive relationship with the quality of housing, whereby the rent increases exponentially with the quality of housing. For example, in Costa Rica in 2018, the rent for a dwelling with a final housing quality score of 7 was approximately 28,000 Costa Rican colones per month per adult equivalent, while the rent for a dwelling with a final housing quality score of 17 was 119,000 colones per month per adult equivalent. Using this relationship, we can estimate the monthly rent per adult equivalent for each housing quality score.

12 Although the methodology assumes that the quality of the house is the main determinant of the rental price, there are other major factors that can influence the rent, such as the location, the neighbourhood or the type of tenure contract. Unfortunately, the data do not allow these factors to be taken into account.

▶ **Figure 9. Monthly cost of rent per adult equivalent by housing quality score in the pilot countries**

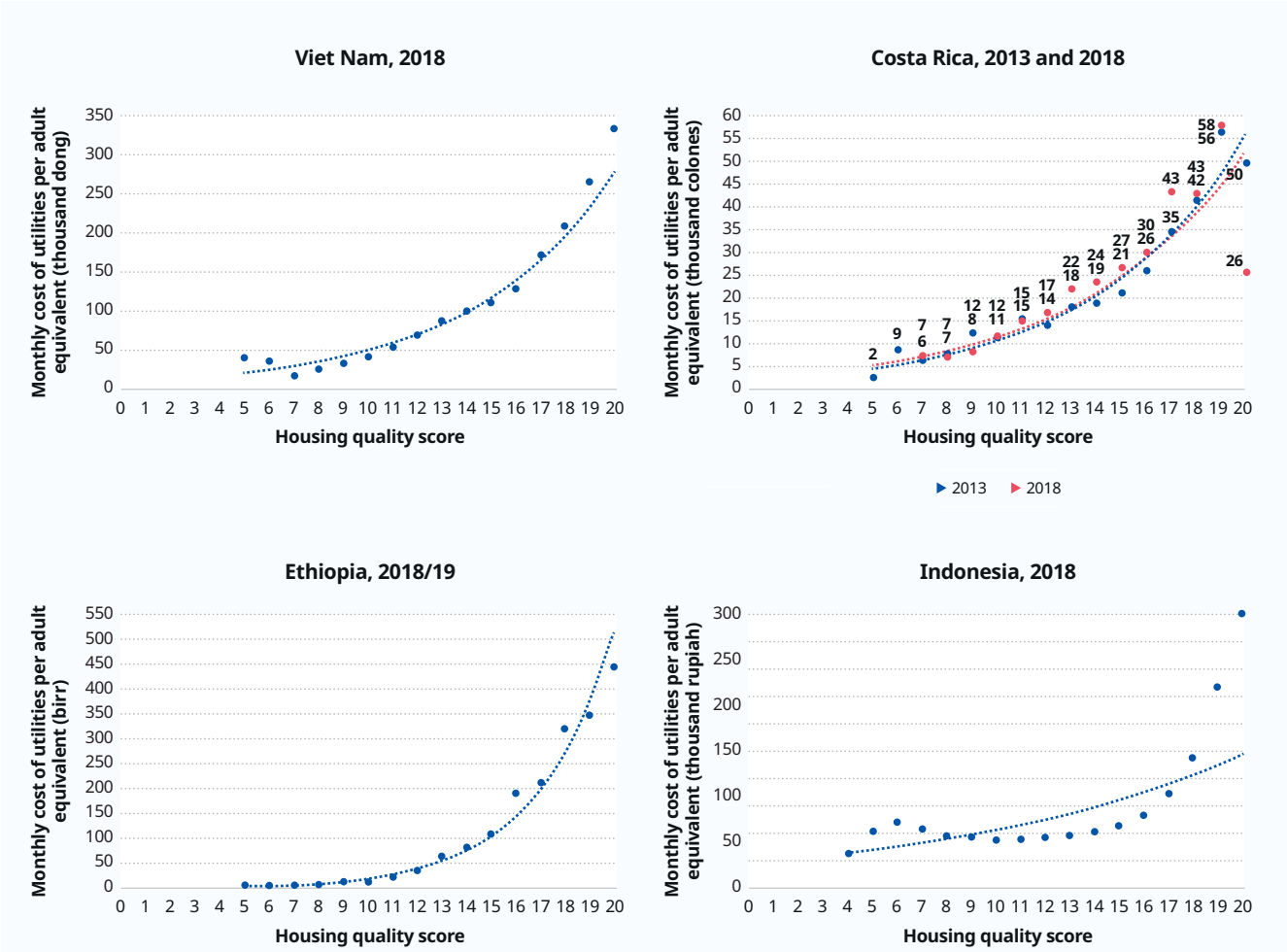


Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2013 and 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2013 and 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

Similar results may be observed for the cost of utilities. As shown by figure 10 – in which the vertical axis indicates the monthly cost of utilities and the horizontal axis the housing quality score – in all the pilot countries, the cost of utilities shows a strong positive relationship with the quality of housing. For example, in Costa Rica in 2018, the cost of utilities for a dwelling with a housing quality score of 7 was approximately 7,000 colones per month per adult equivalent, while the cost of utilities for a dwelling with a housing quality score of 17 was 43,000 colones per month per adult equivalent. Using this relationship, we can estimate the monthly cost of utilities per adult equivalent for each housing quality score.

Once we have estimated the cost of the dwellings associated with each housing quality score, the next step is to identify the lowest score that corresponds to decent housing in the national context and obtain the associated cost of such a dwelling from the fitted regression line. Rather than using the observed data points to estimate the cost of the dwelling, it is preferable to use the fitted regression line in order to avoid bias due to outliers.

▶ **Figure 10. Monthly cost of utilities per adult equivalent by housing quality score, pilot countries**



Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2013 and 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2013 and 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

Box 2. What to do when rent information is unavailable or limited?

As we highlighted at the start of this chapter, along with housing characteristics, rent information is required to effectively estimate the cost of adequate housing. While these data are often conveniently retrievable from income and expenditure surveys, in some cases rent information is missing because individuals own their properties.

A lack of data can be problematic, since it can introduce a substantial amount of bias into the analysis, which ultimately reduces the reliability of the resulting estimates by increasing the margin of error. A useful solution is to impute the missing data, but following what method?

In Viet Nam, we used a unit imputation of the rent equivalent for households that are homeowners. More specifically, we made use of the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), which asks respondents for an estimation of the market value of their dwelling if it were to be sold. Using the sample of households that rent their dwellings, we computed a coefficient to express the value of rent as a share of the market value of a dwelling (value of rent/value of dwelling). Lastly, we calculated the median value of these coefficients and applied it to households that were owners of their dwellings. As a result, we were able to retrieve imputed rent values for the vast majority of households surveyed.

Step 4: Identify the final score that corresponds to decent housing

How do we identify the lowest score that corresponds to decent housing? A decent level of housing may be defined as any quality of housing in which workers and their families can live in a humane, dignified manner. To identify what constitutes such a dwelling, we refer to the recommendations produced by UN-Habitat, which set out housing criteria for the minimum-quality level of housing that allows households to enjoy a decent and dignified life at a minimized monthly cost. At the lowest level of decent housing, our approach consists of assessing, for each of the dimensions identified in step 1, the score level that satisfies the UN-Habitat requirements for a dwelling not to be classified as a slum. To do so, for each dimension we compare the UN-Habitat criteria with the information provided by the expenditure survey variables previously identified and to which a score from 1 to 5 has been assigned. This makes it possible to identify, for each dimension of a dwelling, a minimum level of decency and an associated score category (from 1 to 5). It should be noted that, because this process uses the score categories constructed in step 2, comparisons between countries are not relevant. As the characteristics of dwellings and their heterogeneity vary significantly among countries, the transformation of the qualitative information provided by expenditure survey variables (which are reclassified, as explained in step 2, across five categories from the lowest to the highest quality) is specific to each country context.

In the following subsections, we set out how this baseline methodology makes use of the UN-Habitat recommendations and the information provided by expenditure survey variables in order to identify a minimum level of decent housing for each dimension, namely living space, durability, facilities and access to water.

Living space

One of the main characteristics of a decent dwelling is that it should provide sufficient living space for workers and their families. Insufficient living space leads to overcrowding, as in slums, which has serious consequences for privacy, well-being and mental and physical health (OHCHR 1991; UN-Habitat 1998; Duncan 2007; Leventhal and Newman 2010; WHO 2018). Slums are generally occupied by a large number of people, often with several families sharing overcrowded living spaces (UN-Habitat 2003a). To identify what characterizes the insufficiency of a living space, different variables can be analysed depending on the availability of information, such as the maximum number of individuals per room, the number of rooms per dwelling, the number of square metres per person or the number of families living in the same place. In terms of space, UN-Habitat (2018) recommends that no more than three persons should share the same habitable room. However, the size of a habitable room may vary significantly by country and may not, in fact, provide sufficient living space for three persons. Although the UN-Habitat recommendation may not appear sufficiently stringent in the context of certain local realities, it nevertheless provides us with a minimum standard of decent housing (as agreed by the expert group meetings convened in 2002 by UN-Habitat, the United Nations Statistics Division and the Cities Alliance),[13] which can be easily retrieved from expenditure surveys, given that information is generally available on the number of persons per room. Then, depending on the context, especially the level of development of the country in question, the recommendation can be tightened, as in the case of Costa Rica, where 1 to 1.5 persons per room was identified as the minimum decent housing level, given that Costa Rica is classified as an upper-middle-income country (World Bank, n.d.b).

13 See UN-Habitat (2003b).

Anker and Anker (2017) favour using the number of square metres to identify the minimum living space for decent housing, while taking into consideration the level of development of the country. Such an approach is also in line with that recommended by the World Bank's International Comparison Programme.[14] In addition to offering greater precision when defining minimum requirements for living space, such an approach has the advantage of being more relevant in the context of wage setting, as rent costs are generally associated with the amount of floor space. Following the approach set out by Anker and Anker (2017), the average (or median) floor space per person – depending on the country's development level and region – may be used to define a minimum threshold of living space for decent housing. Following such an approach, and using the average estimates of square metres per person provided by the United Nations (see UN 2000) for 188 cities, we consider the following to be the minimum living space requirements:

- 8.6 m^2 for Africa;
- 10.2 m^2 for Asia and Oceania (excluding Australia, New Zealand and Japan);
- 11.0 m^2 for Latin America and the Caribbean.

If, in addition to the number of persons per habitable room, the expenditure survey provides information on the number of square metres per person, these two variables are used to assess the minimum score in terms of living space for decent housing.

Durability

The durability of a dwelling is what guarantees the safety of the family members, not only in the face of climatic conditions such as dust, rain, heat or cold, and humidity, but also in the face of aggression by a third party, whether human or animal (including insects that carry diseases). In terms of durability, decent housing is constructed in a manner that allows it to provide the minimum level of protection necessary for a decent life in security (OHCHR 1991; Mastrucci and Rao 2017). The ability of a dwelling to provide such protection is reflected in the durability of the building materials, especially those used in the construction of the walls, roof and floor (Rao and Min 2018). Accordingly, UN-Habitat (2018) recommends that a dwelling may be considered "durable" when it has a permanent and adequate structure that protects the family members from extreme climatic conditions, which can be assessed through the permanency of the material used for the walls, roof and floor. This is in line with the approach followed by Anker and Anker (2017), who recommend cement, stone or baked bricks for wall materials; corrugated iron, tile or cement for roof materials; and cement for the floor. Also, in addition to the durability of the construction material, UN-Habitat considers that, for a dwelling to be considered decent – and not a slum – it must not be in a dilapidated state or in need of major repairs. The availability of information on the quality of building materials may allow a better assessment of whether a dwelling is in decent condition in the short term. Of the four pilot countries considered in this study, information on material quality was available only for Costa Rica, where three levels of quality are reported: bad, average and good.

Depending on the context, however, the durability requirements for a dwelling to be considered decent may be more stringent. This is the case, for example, when the minimum protection required for a decent dwelling must include other variables as determined by local geological and climatic hazards, such as the possibility of flooding, high winds or earthquakes. The choice regarding the durability and the quality of materials should therefore take such risks into account. For example, a roof constructed of cement and bricks may be preferred to one constructed of tiles in a country in which high winds or earthquakes are prevalent. As for living space, requirements can also be made more stringent in line with the level of

14 For more information on the International Comparison Programme, visit https://www.worldbank.org/en/programs/icp.

development of a country. For instance, in Costa Rica, an upper-middle-income country, *zócalo* board (made from either wood, zinc or fibre cement) was identified as the minimum standard for walls, prefabricated parts as the minimum standard for roofs, and cement as the minimum standard for floors, all of which are given a score of 4. An analysis of data gathered through the expenditure survey may allow the national context of each country to be taken more fully into account. Lastly, it should be noted that UN-Habitat (2018) also makes recommendations regarding location, stating that decent housing should not be situated in a dangerous location, that is, "not located on or near toxic waste, in a flood plain, not located on a steep slope, not located in a dangerous right of way of rail, highway, airport, and power lines". Even where this information is available (which is quite uncommon in expenditure surveys), the main difficulty lies in how to assign scores to the different levels of exposure to an inadequate environment.

Facilities

The quality and presence of certain facilities are also important elements that characterize the quality of decent housing. Toilets are one of the key facilities to be considered when assessing whether a dwelling is decent. This is because toilets are necessary not only for public health but also for human dignity. For this purpose, access to a toilet and the hygiene associated with it are generally assessed for a dwelling. Accordingly, following UN-Habitat recommendations, we determined that decent housing should have the following sanitation facilities:

- access to improved sanitation through an excreta disposal system (a private or a public toilet shared with a reasonable number of people);
- hygienic separation of human waste from human contact.

In addition, for public sanitation, the toilet should be shared by a reasonable number of people (UN-Habitat 2006). Following these requirements, UN-Habitat (2018) provides examples of improved sanitation facilities, including flush/pour-flush toilets or latrines connected to a sewer, septic tank or pit; a ventilated improved pit latrine; a pit latrine with a slab or platform that covers the pit entirely; and composting toilets/latrines. Anker and Anker (2017) formulate similar recommendations, requiring that a decent dwelling should have at least a pit latrine with a slab. For instance, in Costa Rica, a toilet connected to a septic tank with treatment was chosen as the minimum requirement for a decent dwelling, which corresponds to a decent housing score of 4. Such a choice not only is in line with UN-Habitat recommendations but also takes account of the development level of the country.

Although UN-Habitat does not provide recommendations regarding kitchen facilities, the presence and the quality of such facilities are also relevant when assessing the decent housing score of a dwelling. Anker and Anker (2017) formulate recommendations regarding the location of the kitchen, which should have adequate ventilation if it is inside the dwelling. The existence of a kitchen enhances hygiene and safety by preventing food from being exposed to all types of human waste and by limiting the risk of fire or intoxication by gas or smoke. Among the pilot countries, however, such information was available only for Ethiopia, where one variable provided information on the presence of a kitchen in the dwelling (a score of 1 is given if there is no kitchen). Where dwellings had a kitchen, information on the type of kitchen was provided and a score allocated according to whether the kitchen was traditional (score of 3) or modern (score of 5). In this case, the traditional kitchen was selected as the minimum level of decent housing (score of 3).

Access to water

Access to a safe water source, which is a human right for all, is also an important element to consider when assessing the decent housing quality of a dwelling. Workers and their families should be able to enjoy a home that gives them access to a source of water that does not jeopardize their health, whether for drinking or for personal hygiene and cleanliness. For

this purpose, UN-Habitat (2018) recommends that a decent dwelling, contrary to a slum, should have access to an improved water source, which is defined as access to "a facility that is protected from outside contamination, in particular from faecal matters' contamination". In addition, UN-Habitat (2006) recommends that access to sufficient water be such that it is affordable and does not require extreme effort from household members, especially on the part of women and children. Accordingly, examples of improved drinking water sources include piped water in a dwelling, plot or yard; a public tap/standpipe; a protected spring; rainwater collection; a bore hole/tube well; and a protected dug well. In Ethiopia, for example, the minimum level of decent water access was determined to be households with at least a standpipe available outside the dwelling (score of 3). Anker and Anker (2017) follow the same recommendations as UN-Habitat, insisting that the water source must be close to the dwelling and must be protected.

Nevertheless, as with other dimensions of decent housing, the minimum requirements with regard to access to water can be better identified when the local context – and, in particular, the level of development of the country – is taken into account. Such considerations can, for example, increase the minimum requirement for decent housing from a public tap or standpipe to the presence of piped water in the dwelling, plot or yard.

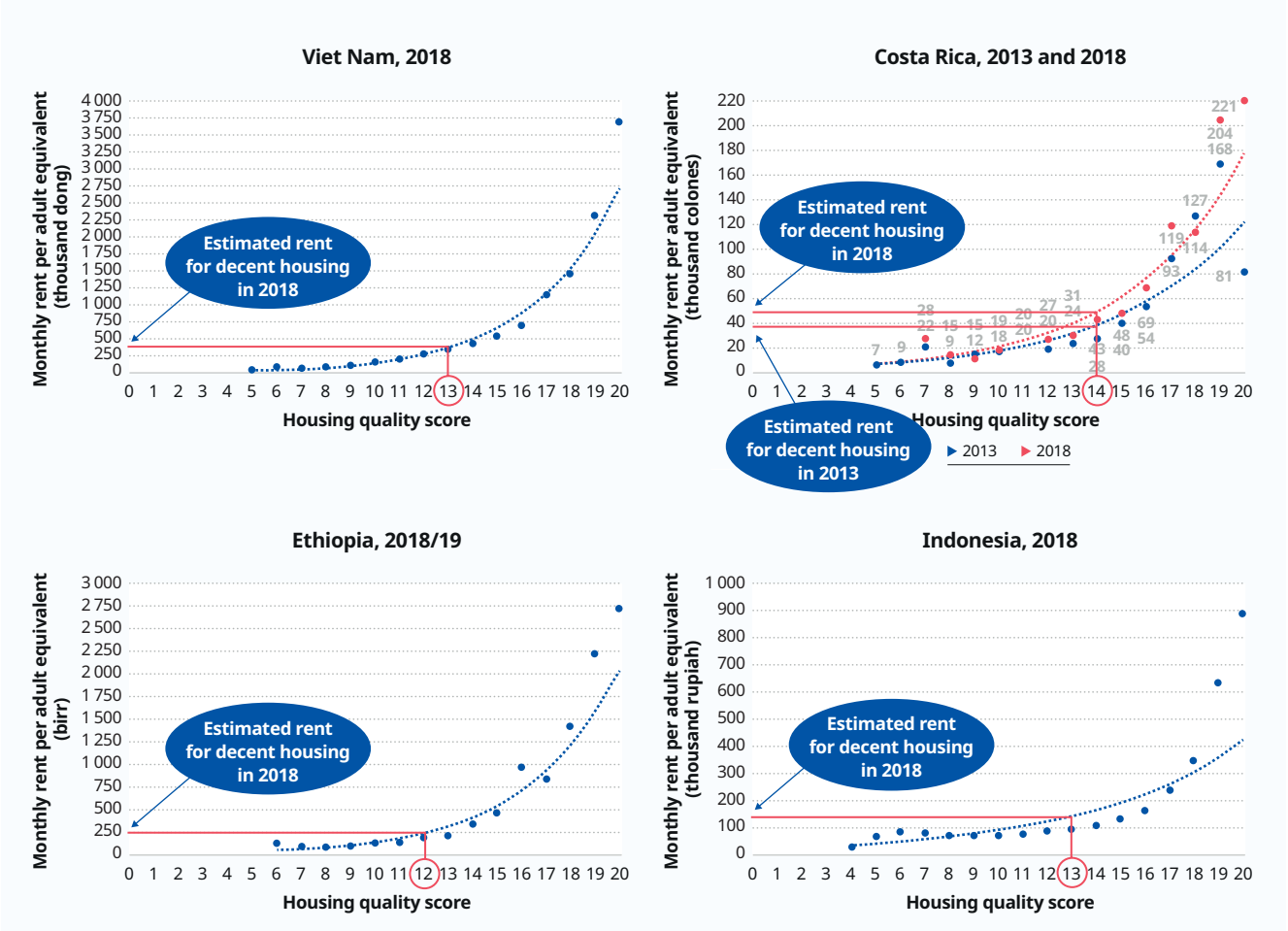
Using such minimum decent housing criteria, as summarized in table 28, we can identify the minimum decent score for each dimension, which can then be added together to calculate the total score associated with decent housing. In the case of Costa Rica, we established the minimum requirements of decent housing to be a score of 4 for both facilities and durability and a score of 3 for living space and access to water. The minimum score associated with decent housing in this case adds up to a total of 14.

▶ Table 28. Thresholds of decent housing based on the UN-Habitat definition of slums

Space	Overcrowding can be expressed in terms of the available square metres per capita or by the number of people per dwelling, per room or per bedroom. UN-Habitat defines overcrowding as households with more than three persons per room.
Durability	"Durable housing" is generally defined as a "unit that is built on a non-hazardous location and has a structure permanent and adequate to protect its inhabitants from the extremes of climate conditions such as rain, heat, cold and humidity". This is usually determined by the material used in the construction of the walls, roofs and floors. Permanent materials include, for example, burnt brick, stones, concrete and tiles. Non-permanent (temporary) materials that must be replaced frequently include grass, bamboo, leaves and mud.
Facilities	A household that has access to basic sanitation is defined as having sustainable access to safe, hygienic and convenient facilities for human excreta disposal. In urban areas, this is characterized by direct connection to a public, piped sewer, direct connection to a septic system, or access to pour-flush latrines or ventilated improved pit latrines.
Access to water	The water available to the household should be affordable and of sufficient quantity that it does not require excessive expenditure of effort or time. The household should have access to an improved water supply with household connection, a public standpipe shared by a maximum of two households, a borehole well, a protected spring or rainwater collection.

Source: UN-Habitat (2006).

▶ Figure 11. Monthly rent associated with the decent housing score in the pilot countries



Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2013 and 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2013 and 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

The exercise of determining the decent housing score may be, to a certain extent, subjective, in the sense that, while for some a score of 12 may be deemed acceptable, for others a score of 14 represents an appropriate level of decent housing. Nonetheless, this method should provide all the necessary information to inform tripartite negotiations on the matter and to enable negotiators to define, in a consensual manner, a minimum level of decent housing, below which no one should have to live. In the individual studies on the pilot countries, we have tried to follow the recommendations of UN-Habitat and the literature while reconciling them with local realities, in particular in light of expenditure survey data and information on the housing occupied by workers and their families.

Step 5: Identify the cost of rent corresponding to the minimum decent housing score

Having identified the total score corresponding to the minimum level of decent housing in step 4, the rent corresponding to this score is then estimated using a non-linear regression between the rents and the final housing quality scores. This non-linear regression captures the relationship between each total score and the rent, thereby enabling analysts to estimate the rent associated with each final housing quality score (between 4 and 20). As indicated in step 3, such a relationship follows the same exponential trend in all the pilot countries. The estimated parameters $\hat{a}_1$ and $\hat{a}_2$ of the following exponential function allow us to estimate the cost of rent corresponding to each total score:

$$Rent = \hat{a}_1 \times \exp(\hat{a}_2 \times Total\ score),$$

where exp is the exponential function.[15]

Once $\hat{a}_1$ and $\hat{a}_2$ have been estimated, the total score in the above equation should be replaced by the value corresponding to a decent quality of housing, as described in table 29. Figure 11 illustrates the different relationships, showing how the rent cost may be associated with the decent housing score for each pilot country. For instance, in Ethiopia, the estimated values of the relationship parameters $\hat{a}_1$ and $\hat{a}_2$ are 10.038 and 0.2664, respectively, as estimated by the fitted regression. Using the total score for decent housing identified in Ethiopia, which amounts to 12, and replacing the estimated parameters in the identified relationships, we are able to estimate the monthly rent cost per adult equivalent associated with decent housing, which amounts to 245 Ethiopian birr.

▶ Table 29. Estimation of the rent cost for decent housing in the pilot countries, using the fitted regressions between the final housing quality score and the cost of rent

	Total decent housing score	Fitted regression: $Rent = \hat{a}_1 \times \exp(\hat{a}_2 \times Total\ score)$	Estimated monthly cost of rent for decent housing (per adult equivalent)[1]
Costa Rica	14	$f(14) = 2.5469 \times \exp(0.2127 \times 14)$	50 033 colones
Ethiopia	12	$f(12) = 10.038 \times \exp(0.2664 \times 12)$	245 birr
Indonesia	13	$f(13) = 18.998 \times \exp(0.1552 \times 13)$	142 870 rupiah
Viet Nam	13	$f(13) = 7.8422 \times \exp(0.2933 \times 13)$	355 000 dong

[1] Values provided in national currencies.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

15 In practice, the exponential regression is estimated by applying an ordinary least squares regression to the following log-transformed equation: $\ln(Rent) = \ln(\hat{a}_1) + \hat{a}_2 \times Total\ score + \varepsilon$

▶ Table 30. Examples of dwellings across the range of housing quality scores in Ethiopia, with monthly rents and housing characteristics, 2018/19

Final score	Monthly rent per adult equivalent (birr)	Examples of housing characteristics						
		No. of persons per room	Material used for walls	Material used for roof	Material used for floor	Toilet	Kitchen	Water source
5	38	Higher than 5	Natural sources	Natural sources	Natural sources	No facilities	No kitchen	Rain or surface water
10	144	Between >2 and 3	Metal	Wood or plastic	Wood	Pit latrine with slab	Traditional	Unprotected source
11	188	Between >2 and 3	Metal	Wood or plastic	Wood	Pit latrine with slab	Traditional	Protected source
12	**245**	**Between >2 and 3**	**Wood**	**Iron sheet**	**Plastic tiles**	**Pit latrine with slab**	**Traditional**	**Protected source**
13	320	Between >2 and 3	Stone	Cement	Plastic tiles	Pit latrine with slab	Traditional	Protected source
14	418	Between >1.3 and 2	Stone	Cement	Plastic tiles	Pit latrine with slab	Traditional	Protected source
15	546	Between >1.3 and 2	Stone	Cement	Brick or cement	Pit latrine with slab	Traditional	Piped water near the dwelling
20	2 068	Equal to or less than 1.3	Blocks	Cement	Ceramic or marble	Flush toilet	Modern	Piped water in the dwelling

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

By definition, the housing quality score is a constructed number intended to classify dwellings according to their level of quality. It does not, however, provide a concrete idea of what a dwelling with a given score would look like. It may therefore be useful to provide specific examples of dwellings and their characteristics at different housing quality scores. This may also help social partners to decide whether the selected score reflects an appropriate level of decent housing. For instance, table 30 shows that, in Ethiopia, a dwelling with two to three persons per room, walls made of wood, a roof made of iron sheet, a floor made of plastic tiles, a pit latrine toilet with a slab, a traditional kitchen and a protected water source would meet the selected minimum decent housing score of 12. A dwelling with a score of 14 would allow improvement to be made to various characteristics, such as the living space and the materials used for the walls, roof and floor. Such improvements would come at an estimated additional monthly cost of 173 birr per adult equivalent.

Step 6: Identify the cost of utilities corresponding to the minimum decent housing score

Following the same approach as that taken when estimating the rent cost associated with a decent housing score (see step 5), the corresponding estimated cost of utilities can be obtained in a relatively straightforward manner. As shown in step 3, a fitted regression captures the relationship between the housing quality score and the cost of utilities per adult equivalent, which can then be used to associate the cost of utilities with a given housing score. As with the estimation of rent costs, in replacing the identified decent housing score within the identified relationships between the cost of utilities and the housing scores, we can obtain the estimated cost of utilities for decent housing. We call such a relationship $g(x)$, with parameters to be estimated $\hat{e}_1$ and $\hat{e}_2$. For each of the pilot countries, table 31 shows how the approach to estimating the cost of rent for decent housing can be replicated to estimate the cost of utilities once a fitted regression has been applied to the corresponding relationship with the housing scores.

▶ Table 31. Estimation of the cost of utilities for decent housing in the pilot countries, using the fitted regressions between the final housing quality score and the cost of utilities

	Total decent housing score	Fitted regression: $g(x) = \hat{e}_1 \times \exp(\hat{e}_2 \times x)$	Estimated cost of utilities for decent housing (per adult equivalent)
Costa Rica	14	$g(14) = 2.5629 \times \exp(0.1515 \times 14)$	21 373 colones
Ethiopia	12	$g(12) = 0.836 \times \exp(0.321 \times 12)$	39.36 birr
Indonesia	13	$g(13) = 26.266 \times \exp(0.0859 \times 13)$	80 236 rupiah
Viet Nam	13	$g(13) = 9.0595 \times \exp(0.1715 \times 13)$	84 200 dong

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

As an illustrative example, the estimated monthly needs for utilities per adult equivalent in Viet Nam correspond to those associated with a dwelling with a decent housing score of 13. Using the fitted regression, the cost is determined to be 84,200 dong at the national level (see figure 12).

▶ **Figure 12. Monthly cost of utilities per adult equivalent by housing quality score, Viet Nam**

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Step 7: Estimate the total cost of decent housing (rent plus utilities) for a reference family size

After the costs of rent and utilities for decent housing have been identified, the total monthly cost of decent housing per adult equivalent is calculated by adding together the two estimates obtained in steps 5 and 6. The monthly decent housing needs for a reference family size are then estimated to determine both the cost of monthly rent and the monthly consumption of utilities (water, waste disposal, electricity and other energy sources), taking into account the economies of scale that exist within a household. The needs of a family of two with regard to living space, sanitation, and access to and consumption of water and electricity do not simply double for a family of four, for example (OECD, n.d.). The estimated monthly cost per adult equivalent for decent housing cannot simply be multiplied by the number of persons living in the family. For this purpose, the OECD adult equivalence scale (Oxford scale) is used to convert the number of persons in a reference family into adult equivalents. The converted number of adult equivalents in the reference family is then multiplied by the total cost of decent housing per adult equivalent, thereby providing the cost of monthly decent housing needs for a reference family.

At this stage, it is important to recall that, as explained in the previous section on food needs, the reference family size is selected so that it corresponds to the national average family size, rounded up to the nearest whole number. This enables us to remain pragmatic, avoiding a multiplicity of estimates and ensuring that estimates are consistent with a representative family size.

Table 32 provides an illustrative example of step 7 for Ethiopia. The total cost of decent housing per month and per adult equivalent is equal to the estimated cost of rent plus the estimated cost of utilities. Accordingly, the total monthly needs per adult equivalent for decent housing amount to 285 birr. To ensure that the estimated needs are sufficient for a representative family size (five members in Ethiopia) and to take into account household economies of scale, they are multiplied by the corresponding number of adult equivalents in the family (3.304). Therefore, the total cost of the monthly needs of a family of five with regard to decent housing, including utilities, at the national level in Ethiopia amounts to 941 birr.

▶ **Table 32. Estimated monthly costs of decent housing in Ethiopia for a reference family size of five, 2018/19**

Decent housing score	Monthly rental cost per adult equivalent (birr)	Monthly cost of utilities per adult equivalent (birr)	Total housing cost per adult equivalent (birr)	Average adult equivalent per household (using OECD equivalence scale)	Monthly cost of housing for a family of five (birr)
12	245	39	285	3.304	941

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

How do these results compare with median expenditure on housing?

When comparing the results obtained through the methodology presented above with the median expenditure on rent and utilities, we observe that our estimates range from 71 per cent of the median rent in Viet Nam to 123 per cent of the median rent in Ethiopia (table 33). Regarding utilities, results range from 71 per cent of the median expenditure on utilities in Viet Nam to 128 per cent in Indonesia. These results suggest that, in some cases, and in particular in low-income countries, the use of a normative approach may lead to estimates that are significantly higher than the median expenditure.

▶ Table 33. Comparing estimates of monthly cost of decent housing with median values in the pilot countries

	Year	Median rent cost per adult equivalent	Estimated rent cost per adult equivalent	Ratio (cost of rent)	Median cost of utilities per adult equivalent	Estimated cost of utilities per adult equivalent	Ratio (cost of utilities)
Ethiopia	2018/19	200 birr	245 birr	1.23	34 birr	39 birr	1.16
Viet Nam	2018	503 000 dong	355 000 dong	0.71	119 000 dong	84 000 dong	0.71
Indonesia	2018	117 037 rupiah	142 870 rupiah	1.22	62 634 rupiah	80 236 rupiah	1.28
Costa Rica	2018	54 545 colones	50 033 colones	0.92	18 880 colones	21 373 colones	1.13

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

4 The cost of healthcare and education: A relative approach

4. The cost of healthcare and education: A relative approach

Having defined the methodology for estimating the needs of workers and their families in the two largest categories of expenditure that a household faces, in this section we consider expenditure on healthcare and education, both of which are frequently recognized as essential needs and even fundamental human rights in national constitutions and in the Universal Declaration of Human Rights. It is essential for workers that their wages allow them to access quality healthcare for themselves and their family members and to provide an adequate education for their children. Therefore, the inclusion of healthcare and education expenses is essential for estimating a living wage.

The importance of a family's health and education needs is multifaceted and has several implications. Health and education are the key contributors to building the human capital of individuals, making them more productive and enabling them to create wealth for businesses and the country as a whole (World Bank, n.d.c). Being more productive also allows workers to achieve a better standard of living by earning better wages. Good health is also essential to human happiness and well-being and makes an invaluable contribution to economic progress. Beyond the question of decent wages, it makes economic sense to provide workers with wages that allow them to guarantee the health and education of their families, especially their children. Doing so constitutes an investment in the human capital formation of the country's future productive generations. Furthermore, workers at the bottom of the income distribution range tend to have larger families with more children, especially in developing countries. When the wages of those at the bottom of the distribution range do not allow them to obtain adequate education and good health, most of the future productive generation is sacrificed. This is why health and education are at the heart of sustainable development and constitute a powerful engine for development and poverty reduction.

Another key factor is the decisive role that health and education play in creating and amplifying inequalities in societies. The problem of increasing social inequality has become a major issue and is increasingly the focus of attention among public policymakers and international organizations. In this context, labour markets have been identified as one of the main elements that shape these inequalities (ILO 2021e). If children from the most disadvantaged households do not have access to quality education and good health, they will not be able to enter the labour market with the level of productivity necessary to allow them to access better jobs and better incomes.

These are the reasons underlying Sustainable Development Goal 3, on ensuring healthy lives and promoting well-being for all at all ages. Although, in many countries, access to healthcare is provided by public services for free or at relatively low cost, it should be noted that the quality of such services varies considerably, especially among developing countries (WHO 2020). As a result of poor-quality services or limited access to public healthcare, in many developing countries families have significant health-related expenditures that are an important source of household impoverishment (ILO 2021f). Although this partly results from the weakness of social security systems in developing countries, it also results from the fact that low-income families do not have enough savings to meet healthcare expenses, which often include the purchase of medical supplies and pharmaceuticals, even if the service is theoretically provided free of charge. Under these conditions, some families choose either to not seek care or to rely on other, less conventional, ways of seeking care that carry enormous risks.

Similar imperatives underlie Sustainable Development Goal 4, on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. Again, despite the existence of public education systems that are normally free of charge, the quality of public education provided in some countries does not allow children to acquire skills that would empower them to succeed in life. Lower-income families are disadvantaged; for their children to access the same quality of education as do the children of wealthier families, they must cover additional expenditures beyond what is offered by public education services (OECD 2019, ch. 2). This could jeopardize the limited financial resources of lower-income households.

To estimate the costs of healthcare and education for workers and their families, a different approach to that followed so far has been adopted. The costs of health and education are estimated so that they are representative of the expenditure of a reference group of households in the expenditure distribution. The baseline methodology for health and education can be summarized by the following steps:

1. Select the reference group of households and estimate the cost of healthcare and education per capita.
2. Estimate the total costs for a reference family size.
3. Produce regional estimates of the costs, where necessary.

It should be noted that one of the benefits of using a relative approach when estimating healthcare and education expenditure is that it helps to ensure that the estimates of those costs are consistent with national socio-economic realities. While normative approaches have been used for food and housing, the use of a normative approach for healthcare and education expenditure would imply heavy reliance on theoretical normative requirements, which could result in some estimates being disconnected from local socio-economic realities. Introducing a relative measure based on national expenditure distribution helps avoid such issues.

Although a normative approach would ensure that every worker has access to decent minimum living conditions as guaranteed by established minimum requirements, using a relative measure ensures that arbitrary choices are not made regarding categories of expenditure for which – unlike food or housing – it is very difficult to agree on minimum standards of quantity and quality (Anker and Anker 2017, ch. 7). While the relative approach, unlike the normative approach, does not guarantee the satisfaction of certain minimum standards for the needs of workers and their families, it is, at least in part, consistent with the spirit of Article 3 of ILO Convention No. 131, which calls for consideration of the relative living standards of other social groups.

The following sections review steps 1 to 3 of our method for estimating healthcare and education needs, along with an example of how the approach was applied in one of the pilot countries. The chapter concludes by discussing the validation process and the possible adjustments that may be needed in order to reflect national circumstances, as well as some alternative estimation strategies.

Step 1: Select the reference group of households and estimate the cost of healthcare and education per capita

The behaviour of a household – and, therefore, its level of spending on healthcare and education, as well as on other essential goods and services – varies according to household income. The share of non-food and non-housing expenditure generally increases as income and development levels increase (Anker and Anker 2017, ch. 7). Looking at the pilot countries, it can be observed that households with lower incomes tend to spend more on food and, consequently, less on other essential forms of expenditure, in particular healthcare and education (see table 34).

▶ **Table 34. Share of food expenditure per household in the pilot countries, by quintiles (percentage of total expenditure)**

Quintile	Costa Rica	Ethiopia	Indonesia	Viet Nam
1	27	79	67	51
2	22	78	63	46
3	20	78	60	45
4	15	75	55	42
5	8	70	37	33

Note: Quintile 1 corresponds to the lowest level of expenditure, while quintile 5 corresponds to the highest level of expenditure.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2013 and 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2013 and 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

It is therefore necessary to identify a group of households that represent low-paid workers who have a relatively decent standard of living. In this baseline methodology, the group of households selected to estimate healthcare and education needs is the same as those households selected to estimate food needs and for which calorie consumption was the closest to the minimum requirement. The choice of such households allows us to maintain some consistency with the normative approach used for food. In addition, such an approach is similar to that used to estimate non-food expenditure in a minimum expenditure basket methodology, which also uses the expenditure information of selected reference households (WFP 2020). Both methodologies are inspired by the CBN approach to defining poverty lines, as developed by the World Bank (Haughton and Khandker 2009).

Accordingly, the reference households are those belonging to the reference quintile that is identified in the food analysis as being the quintile whose calorie intake is the closest to the calorie requirements of 2,950 kcal (2,150 kcal for Indonesia) per day and per adult equivalent (or per person where adult equivalent estimates are not available). After identifying the reference quintile, the cost of healthcare and education spending for one member of the family is estimated as the average cost of spending per capita for the reference households. Unlike the estimation of food and housing needs, the estimation of healthcare and education uses per capita estimates rather than per adult equivalent estimates because there are no economies of scale for such expenditures. It does not seem appropriate to assume that an additional member of a family will spend any less on healthcare or education, or that a child would spend less than an adult in these two categories. In fact, with respect to education, the opposite is true.

As an illustrative example, the first step of the estimation is applied using data from Viet Nam. Table 35 shows the average monthly per capita household expenditure on healthcare and education by quintiles at the national level in 2018. Next, the healthcare and education needs for one member of the family were estimated as equal to the average monthly expenditure per capita for the reference quintile. Quintile 2 was selected as the reference quintile because its calorie consumption was the closest to the 2,950 kcal benchmark. Consequently, the cost of healthcare and education needs for one member of the family was estimated to be around 152,500 dong at the national level.

▶ Table 35. Average monthly expenditure on healthcare and education per capita in Viet Nam, per quintile, 2018

Quintile	Calories per adult equivalent, using AEEI	Monthly healthcare expenditure per capita (thousand dong)	Monthly education expenditure per capita (thousand dong)	Monthly healthcare and education expenditure per capita (thousand dong)
1	2 534	54.3	23.8	78.1
2	**2 973**	**101.6**	**51.0**	**152.5**
3	3 280	129.3	87.2	216.5
4	3 542	182.1	158.0	340.1
5	4 041	410.0	338.5	748.5
Average	**3 274**	**175.4**	**131.6**	**307.1**

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Step 2: Estimate the total costs for a reference family size

Having estimated, in step 1, the total cost of healthcare and education for one member of the family, in step 2 we need to estimate the costs for the whole family. At this point, as explained previously, a reference family size is used, corresponding to the national average family size rounded up to the nearest whole number. Using the reference family size, the number of persons in the representative family is multiplied by the estimated cost of healthcare and education per capita in order to produce the monthly cost for a reference family.

Table 36 provides an illustrative example of step 2 for Viet Nam. To ensure that the estimated cost of healthcare and education in Viet Nam satisfies the needs of a representative family and takes into account household size, the needs estimated for one person in step 1 are multiplied by the average number of persons in a family of reference size, which corresponds to 3.71 (rounded up to 4) at the national level. Accordingly, the cost of total monthly needs, at the national level, for a family of four in Viet Nam with regard to healthcare and education amounts to 610,000 dong.

▶ Table 36. Monthly estimate of the cost of healthcare and education per capita for a family of four in Viet Nam, 2018

Monthly healthcare and education expenditures per capita (thousand dong)	Average number of persons in a household, rounded up	Monthly cost of healthcare and education for a family of four (thousand dong)
152.5	4	610

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Step 3: Produce regional estimates of the costs, where necessary

In some countries, minimum wage rates differ between geographical areas owing to differences in the cost of living, economic development and labour market conditions, as is the case in Indonesia or Viet Nam (ILO 2020). Therefore, in an additional step, the same approach conducted in steps 1 and 2 can be replicated separately for each relevant geographic division of the country. The geographic divisions used for setting regional minimum wage rates can be used for this purpose. Where there are many rates owing to regional and local divisions and subdivisions, only the broad regional groups are considered for simplicity. However, in the wage negotiation context, social partners can replicate the same approach at the desired local scale if the relevant data are available.

As an illustration of step 3, steps 1 and 2 are replicated for each minimum wage zone using data from Viet Nam. In the case of Viet Nam, the same reference quintile was identified for each of the four different minimum wage zones. Table 37 shows that the estimated needs with regard to healthcare and education vary significantly from one minimum wage zone to another. While, at the national level, meeting the needs of a family of four costs an average of 610,000 dong, the estimates for zone 1 (1,114,000 dong) are more than double those of zone 4 (442,000 dong).

▶ **Table 37. Monthly estimates of the cost of healthcare and education per capita for a family of four in each minimum wage zone of Viet Nam, using the reference quintiles at the national level, 2018**

	Monthly healthcare and education expenditure per capita (thousand dong)	Average number of persons in a household, rounded up	Monthly cost of healthcare and education for a family of four (thousand dong)
Zone 1	278	4	1 114
Zone 2	164		656
Zone 3	166		663
Zone 4	110		442

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Validation, possible adjustments, and discussion of alternative methods

As explained above, our estimation procedure has many advantages, primarily that it is simple and practical and allows estimates to be linked to the socio-economic realities of each country. These advantages will allow researchers to use the method easily, while ensuring that they take into account both the local context and the consumption behaviour of households that are not "too poor" to have a decent standard of living. However, the simplicity of this approach comes at the expense of certain limitations. In this section, we compare the estimates obtained using the reference households identified in step 1 above to alternative estimates obtained using a different choice of reference household. The possibility of using a normative approach to estimate healthcare and education needs is also discussed.

An alternative relative measure: Improving the choice of the reference households

Where permitted by the availability of data, the choice of reference households used to estimate healthcare and education expenditure can be improved to provide a more realistic reflection of the cost of decent healthcare and education, following the same relative approach described above. The objective is to take into account that (a) healthcare and education expenditure depends on the composition and demographics of households, including the age of different family members; and (b) in countries where access to healthcare and education is unevenly distributed across regions, expenditure on such services may also depend on geographical factors. For example, in the case of education, should all households be considered or only those with child dependents? Given the great importance of needs such as healthcare and education, it may help, in some cases, to consider demographic and geographic aspects in order to avoid underestimating the family's needs with regard to healthcare and education.

To account for the demographic composition of the household in the selection of the reference household, it is possible to simply restrict the expenditure estimation sample to households with children under 18 years old (Anker and Anker 2017, ch. 7). The choice of such an age range is explained by the need to allow workers to be able to take care of the health and education expenses of their families, especially for children under 18 years (when secondary education ends). While it could be argued that, in developing countries, education

expenses are virtually zero for the first two or three years of the child's life because family members are generally available to help with childcare and child-rearing, it should be noted that, for this age group, healthcare spending will be highest owing to expenses related to birth and early childhood disease (OECD 2016). In any case, depending on the local socio-cultural realities, social partners can discuss whether it is appropriate to exclude this age group. Moreover, with regard to healthcare expenditure and the presence of elderly persons in the household, it would be prudent not to add this additional restriction to the choice of reference household in order to avoid reducing the analysis sample to a size too small to provide representative, reliable estimates.

Following the same three-stage relative approach described above, an alternative method of measuring healthcare and education needs could be to restrict the reference households in the reference quintile identified to those with at least one dependent child below 18 years old. Accordingly, healthcare and education expenditure is estimated to be the average expenditure per capita for this alternative sample of households. Table 38 provides an illustrative example of the application of such an alternative measure using data from the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018). As we can see from table 38, in the first three minimum wage zones, the estimations obtained by restricting the analysis sample to households with at least one dependent child below 18 years are slightly higher than the baseline estimates obtained when considering all households. The percentage difference varies from 15 per cent in the first minimum wage zone to –2 per cent in the fourth minimum wage zone. This suggests that our baseline choice of reference households is slightly more conservative than the alternative sample. However, the use of such an alternative measure is conditioned by the availability of data on the age of any children in the family. If such information is available through surveys, the alternative approach might be preferable to the baseline methodology.

▶ Table 38. Monthly estimates of the cost of healthcare and education per capita, Viet Nam, at national level and by minimum wage zone, 2018

	Monthly cost per capita of healthcare and education (only households with a dependent child below 18 years old) (thousand dong)	Monthly cost per capita of healthcare and education (all households) (thousand dong)	Percentage difference
National level	158	153	3
Zone 1	328	278	15
Zone 2	188	164	13
Zone 3	186	166	11
Zone 4	108	110	–2

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

In some instances, significant geographic disparities may require improvements to be made to the choice of reference households. For example, in countries where access to healthcare and education is scarce or unavailable in certain regions, especially rural areas, the use of national averages may underestimate the cost of the healthcare and education needs of workers and their families. In such cases, a subsample of the population may be identified to better reflect their needs. In the case of Ethiopia, for example, when validating the

estimates, we chose to use the average expenditure of households in urban areas in order to estimate healthcare and education needs at the national level. This decision was made after carefully reviewing the data and observing a very high prevalence of households in rural areas that had reported zero expenditure on healthcare and education. As a result, the cost of the healthcare and education needs of workers and their families appears to be higher in urban areas, as can be seen in table 39. An adjustment therefore needed to be made to restrict the reference households to those in urban areas, where the cost of decent access to healthcare and education per capita is estimated to be around 42 birr.

▶ Table 39. Average monthly spending on healthcare and education per capita in Ethiopia, national and urban estimates, by quintile, 2018/19

Quintile	Average monthly spending on healthcare and education (birr)	
	National level	Urban areas
1	14	29
2	**22**	**42**
3	33	64
4	66	100
5	188	255
Total	**61**	**141**

Source: ILO estimates based on the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019).

How could healthcare and education expenditure be assessed normatively?

It could be argued that the educational and healthcare needs of a family should be estimated using a normative approach, given their importance. However, the process of setting standards for healthcare and education needs is more complicated than for food and housing because of the large number of different aspects to be considered. For education, for example, a number of questions arise:

- Which education level should be considered (number of years of education)?
- What is the cost of a year of education?
- How many children should be taken into account?
- Which minimal requirements should be considered in terms of quality of education?

In the case of healthcare expenditure, the application of a normative approach seems even more complicated, given that the definition of a minimum standard would ignore the health status of each individual. This may be the reason why, to the extent of our knowledge, no normative approach has been developed in the literature to estimate the cost of healthcare and education needs. However, Anker and Anker (2017) propose a methodology to assess the relevance of the estimations obtained through the relative approach, by comparing them to an approach that uses specific surveys and detailed information on healthcare and education consumption.

If the verification method proposed by Anker and Anker (2017) is applied, the estimates obtained using a relative approach will need to be compared with those obtained using a post-check assessment, which would need to rely on locally collected information to ensure their relevance and reliability. In the context of healthcare and education in particular, expenditure can vary considerably from one country to another, since it is based on the socio-economic reality of each location. For healthcare, information would be required on, among other things, the monthly number of hospital visits, the level of use of public and private medical facilities and the frequency of drug purchases. For education, information would typically be required on the types of expenditure incurred by households for children attending public school. The collection of such information would require the analyst to identify and talk to key informants, according to Anker and Anker (2017). Alternatively, existing surveys, such as those on health or education, could be used. While it is generally difficult to find national surveys of household expenditure on children's education, data on demographic health or healthcare facility surveys would at least provide an indication of the average level of use of healthcare facilities and, possibly, the type of expenditure.

5 The cost of other essential goods and services: A relative approach

5. The cost of other essential goods and services: A relative approach

In addition to healthcare and education expenditure, some other goods and services are also essential for the well-being of workers and their families. It is therefore necessary to consider these other essential goods and services[16] when estimating a living wage. When household income is not sufficient to afford a decent standard of living, households may be forced to choose between these other essential goods and services and more evident essential needs, such as food or children's education. Therefore, after guaranteeing an adequate level of food, decent housing, healthcare and education, a living wage should also consider expenditure on other essential goods and services.

The main complexity with this exercise arises from the fact that the definition of other essential goods and services is highly contextual and depends on national circumstances. Unlike food or healthcare and education, which are obvious and universal needs regardless of the country or the cultural habits of workers, the list of other essential goods and services may vary from one country to another. Certain expenditures may be essential for the sake of inclusion and well-being within society in some contexts but not in others. Therefore, the first step in assessing the cost of other essential needs required to ensure decent living for a given family is to identify those needs. What those needs are and how they are taken into account may be adapted to the national context and may be subject to discussion among social partners.

As when estimating healthcare and education expenditure, a relative approach is again followed to estimate the cost of other essential needs. This decision is motivated by the complexity of applying a normative approach to such needs, which would require minimum standards of consumption to be defined for each of the other essential goods and services. The use of a relative approach based on national expenditure distribution ensures that the needs identified are consistent with national socio-economic realities. In addition, as has been pointed out with the relative approach used to estimate healthcare and education needs, a relative approach based on national expenditure distribution remains consistent with the spirit of Article 3 of ILO Convention No. 131, which calls for consideration of the relative living standards of other social groups. The relative approach used to estimate the needs of workers and their families for other essential goods and services can be summarized as follows:

1. Identify what to include as other essential goods and services.
2. Select the reference group of households and identify the cost of other essential goods and services per adult equivalent.
3. Estimate the total costs for a representative family size.
4. Produce regional estimates of the costs, where necessary.

The following sections review steps 1 to 4 for estimating the costs of other essential goods and services, with examples from Costa Rica. The chapter concludes by discussing the validation process and the possible adjustments that may be needed to reflect national circumstances, as well as some alternative estimation strategies.

16 For the remainder of this section, the term "other essential goods and services" refers to expenditure on all essential goods and services that are not food, housing, education or healthcare.

Step 1: Identify what to include as other essential goods and services

One of the easiest and most effective ways to proceed is to first identify all the types of expenditure that have a significant impact on an individual's well-being and personal development. Among such expenses, one group to be considered is that of clothing and shoes. For a family, clothes are indeed essential for living in a society, in particular when family members go to work, buy food, attend school and get medical care. In addition, a certain level of quality in clothing is sometimes required for social acceptance, in particular for job opportunities. For similar reasons, transportation constitutes another essential expenditure that guarantees the mobility of family members. We also include the purchase or maintenance of durable goods that are used on a daily basis but whose cost is usually incurred either annually or infrequently throughout the year. These include items such as household furniture, furnishings and the utensils used to cook, clean or equip the home and make it habitable (bed, mattress, pillows, irons, brooms, knives, machetes and so on).

Second, expenditure on communication, culture and recreation and other miscellaneous items or services can also affect an individual's well-being and personal development. Communication expenditure includes fixed and mobile telephones, internet and postal services. These expenses are included because they are generally used by families to easily maintain a connection with others, which contributes to their well-being. In some cases, such expenses are even necessary for professional purposes. Expenditure on culture and recreational activities can be classified as other essential goods and services when it contributes to the well-being of the family or constitutes a social obligation, as determined by the national and socio-cultural context. Numerous studies have shown that access to culture, sometimes in concurrence with health, can play an important role in a person's well-being and level of psychological distress (Grossi et al. 2011). Access to leisure activities has even been shown to have long-term effects on the psychological well-being and stress levels of adolescents (Shin and You 2013). Therefore, for workers and their families, access to certain cultural and recreational activities is essential to maintain their mental and physical health. It should be noted that, in this latter group of expenditure, we include some activities (religious events, for instance) that, owing to the cultural context, may be obligatory and for which families are ready to compromise on certain essential expenses.

Other types of expenditures or payments are also considered when estimating the cost of other essential goods and services, including miscellaneous expenses and non-consumption expenses. Miscellaneous expenses include all purchases and costs that a household incurs for personal hygiene (soap, toothpaste, skin creams, hairdressing and so on), non-durable household or cooking supplies (matches, charcoal, candles, cooking gas and so on) and any other miscellaneous needs according to the national or local context. The last expenses to be considered, which are sometimes included in the previous group of miscellaneous expenses, are those related to non-consumption, which are generally mandatory payments to which workers or households are subject and that reduce the resources available to support a family. These are expenses related to the payment of taxes and compulsory social contributions, depending on the national or local context, and are not related to consumption.

After defining the types of expenditure considered to be other essential goods and services, it is sometimes necessary to exclude certain forms of expenditure that are not considered essential. For example, our estimates usually exclude spending on gambling, transportation for domestic or foreign holidays, cosmetic (or aesthetic) surgery and luxury goods such as expensive jewelry or watches. However, these decisions have a subjective character and, if needed, can be discussed by social partners. In addition, depending on the availability of detailed expenditure information, more precise exclusions may be applied, and estimates of more refined expenditure groups may also be made. In any case, the relative approach adopted for estimating the cost of other essential goods and services should normally rule out non-essential expenditure or at least limit it to a reasonable level of spending.

For instance, in Costa Rica, spending on clothing and footwear, transportation, communications, recreation and culture are included in the estimation of the needs of workers and their families. In addition, other miscellaneous goods and services, including articles for personal use, social protection services, insurance and financial services, as well as non-consumption spending, in particular non-income taxes, fines, fees, income tax, and compulsory and voluntary social contributions, are taken into consideration (table 40). In principle, as taxes and social security contributions are taken into consideration, the methodology could in theory produce estimates of the gross living wage. However, for cases where income and expenditure surveys fail to capture these expenses accurately, an alternative procedure is proposed in Chapter 6.

▶ Table 40. Examples of other essential goods and services considered when producing estimations for Costa Rica, 2018

Other essential needs	Details
Clothing and footwear	Materials, clothing and clothing accessories Footwear
Transportation	Purchase of vehicles Vehicle spare parts, accessories and maintenance Fuel and lubricants Transport services
Communications	Postal services Telephone equipment Telephone services Internet services
Recreation and culture	Audiovisual, photographic and computer equipment Recreational equipment, gardens and pets Recreational and cultural services Newspapers, books and office supplies Tourist packages
Other goods and services	Domestic services (care of children or other household members and other domestic workers) Personal care Articles for personal use Social protection services Insurance Financial services Other services not specified above
Non-consumption	Non-income taxes, fines and fees Income tax Compulsory social contributions paid by workers Voluntary social contributions paid by workers Cash transfers and remittances paid by households Other non-consumption expenditure

Source: 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018).

Step 2: Select the reference group of households and identify the cost of other essential goods and services per adult equivalent

As discussed in the healthcare and education section, spending behaviours vary considerably depending on the level of household income. It is therefore necessary to exercise caution when identifying the reference group of households to be used. As with the estimation of healthcare and education needs, the reference quintile identified for estimating food needs is also used to estimate needs with regard to other essential goods and services: reference households are those belonging to the reference quintile identified in the food analysis as being the quintile whose calorie intake is the closest to the calorie requirement. The cost of other essential goods and services corresponds, therefore, to the average monthly expenditure per adult equivalent in the reference quintile. Here, the use of per adult equivalent estimates is preferred because of the existence of economies of scale for most other essential needs. Although this can be debated, studies emphasize that there are household economies of scale in the consumption of goods such as clothing, home furnishings and transportation (Nelson 1988).

The case of Costa Rica is used to illustrate how this method is applied. Table 41 ranks household expenditure by quintile for Costa Rica in 2013 and 2018. Next, the cost of other essential goods and services are estimated as being equal to the average monthly expenditure per adult equivalent from the reference quintile for the given year. For both 2013 and 2018, quintile 2 was selected as the reference quintile when estimating food needs, because the average calorie consumption for that quintile is the closest to the 2,950 kcal benchmark.

▶ **Table 41. Average monthly expenditure on other essential goods and services per household, Costa Rica, 2013 and 2018**

Quintile	Monthly expenditure on other essential goods and services (colones)[1]		Nominal growth rate (percentage)
	2013	2018	
1	26 370	32 277	22
2	**55 978**	**61 657**	**10**
3	87 005	91 358	5
4	153 175	159 542	4
5	463 600	455 649	–2
Total	**157 158**	**160 085**	**2**

[1] The estimates of other essential goods and services do not consider spending on alcoholic beverages, tobacco, gambling, restaurants and hotels. Cost of transport includes vehicle purchase, maintenance and repair, fuel and lubricants, and transport services.

Source: ILO estimates based on the 2013 and 2018 *Costa Rica National Household Income and Expenditure Surveys* (Costa Rica, INEC 2013 and 2018).

Using the average monthly expenditure of quintile 2 as a reference point, the costs of other essential goods and services were estimated to be 55,978 colones in 2013 and 61,657 colones in 2018 for an adult equivalent, as shown in table 42.

▶ Table 42. Detailed average monthly cost estimate of expenditure on other essential goods and services per adult equivalent, Costa Rica, 2013 and 2018

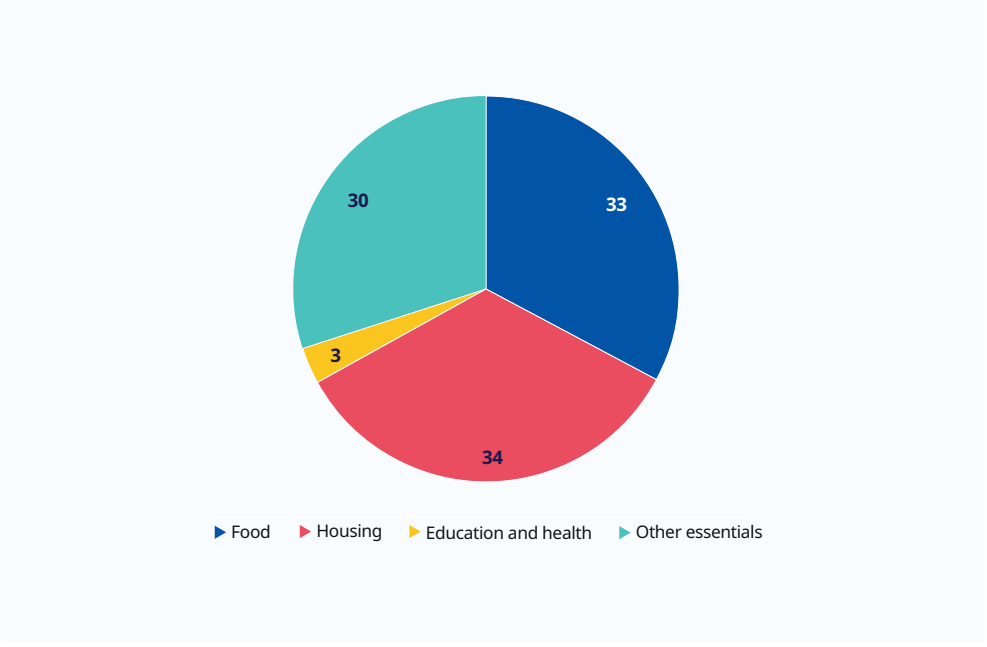
Other essential needs	Average monthly expenditure on other essential goods and services (colones)	
	2013	2018
Clothing and footwear	6 749	5 807
Transportation	12 618	15 370
Communications	7 341	9 134
Recreation and culture	8 098	7 307
Other goods and services	8 220	8 790
Non-consumption	12 952	15 249
Total	**55 978**	**61 657**

Note: Expenditure for durable items is allocated to the different expenditure groups to which the items are related. For example, the purchase of a car is included in transport expenses.

Source: ILO estimates based on the 2013 and 2018 *Costa Rica National Household Income and Expenditure Surveys* (Costa Rica, INEC 2013 and 2018).

As shown in table 42, in 2018, Costa Ricans spent the most per adult equivalent on transport and non-consumption items and the least on clothing and footwear. In addition, figure 13 shows that, in 2018, spending on other essential goods and services accounted for 30 per cent of total expenditure.

▶ Figure 13. Share of expenditure on other essential goods and services per adult equivalent, Costa Rica, 2018 (percentage)



Source: ILO estimates based on the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018).

Step 3: Estimate the total costs for a representative family size

As the estimates calculated in step 2 provide only the needs for one adult equivalent, in step 3 we must convert those needs in order to determine a wage level sufficient to cover the needs of the whole family. To do so, we use a reference family size that corresponds to the national average family size, rounded up to the nearest whole number. Given the existence of economies of scale, the costs estimated in the previous step, which are per adult equivalent, cannot simply be multiplied by the number of persons living in a family of reference size. Accordingly, the OECD adult equivalence scale (Oxford scale) is used to convert the number of persons in a reference family into adult equivalents. Next, the monthly needs with regard to other essential goods and services for workers and their families, linked to the reference family size, are estimated by multiplying the estimated cost of other essential goods and services per adult equivalent by the converted number of persons in such a representative family.

In the example of Costa Rica, the estimates obtained during step 2 are converted into estimates for a representative family. In Costa Rica, the rounded-up average number of persons in a household in both 2013 and 2018 was 3, equivalent to 2.25 adult equivalents and 2.27 adult equivalents in 2013 and 2018, respectively. Table 43 sets out the total estimates for a family of this representative size calculated using the OECD equivalence scale. The estimates amount to 125,679 colones in 2013 and 139,776 colones in 2018.

▶ **Table 43. Average monthly expenditure on other essential goods and services for a family of three in Costa Rica, 2013 and 2018**

	Monthly expenditure per adult equivalent (colones)	Average number of equivalent adults per household	Monthly expenditure for a family of three (colones)
2013	55 978	2.25	125 679
2018	61 657	2.27	139 776

Source: ILO estimates based on the 2013 and 2018 *Costa Rica National Household Income and Expenditure Surveys* (Costa Rica, INEC 2013 and 2018).

Step 4: Produce regional estimates of the costs, where necessary

In step 4, we replicate the previous steps separately for each relevant geographic division within the country. This is necessary in countries where the minimum wage rate differs between geographical areas owing to differences in the cost of living, economic development and labour market conditions, as is the case in Indonesia and Viet Nam.

Validation, possible adjustments, and discussion of alternative methods

As explained above, one of the main difficulties faced when estimating expenditure on other essential goods and services lies in the selection of which needs should be considered essential. Another equally problematic aspect, however, is the need to determine the minimum amount for each type of expenditure that would allow a family to maintain a decent standard of living. As explained above, a lack of resources necessary to satisfy requirements regarding other essential goods and services could lead families to reduce, for example, their food consumption or expenses related to their children's education and could affect their well-being and personal development. In this sense, our estimation method, which uses a practical and simple relative approach, allows us to identify the minimum level of expenditure on other essential goods and services as equivalent to that of a family that manages to satisfy the minimum requirements in terms of food (caloric and nutritional intake). This approach remains conservative and consistent with the realities in the location of interest.

As with the other categories of expenditure, however, one might ask what a normative assessment might look like – that is, how minimum standards for consumption of other essential goods and services could be defined. Here the issue is even more delicate and complex than for any of the other situations discussed above. For instance, beyond the unanimously accepted principle that a person is entitled to clothes and shoes – the most obviously essential of this group of needs – how should a minimum level of decency for this category be determined, both in terms of quality and quantity? The same difficulty arises for all other types of expenditure in the category of other essential goods and services.

Therefore, a normative approach to assessing needs regarding other essential goods and services would be a daunting task. Given the difficulty of accurately identifying the minimum spending level for other essential goods and services that provides a decent standard of living, we can compare our estimates to alternative relative measures as a robustness check. The first and simplest alternative measure would be to change the choice of reference household, while retaining the same three-step approach explained above for our relative measure. To that end, all households in the lower half of the income distribution (or, in our case, total household expenditure distribution) could be considered. The choice of new reference households should lead to similar results to those achieved with our original choice, which used reference quintiles generally located below or near the median of the expenditure distribution. Even for a developing country, it would still be reasonable to consider all the households located in the lower half of the expenditure distribution, as the income distribution is generally compressed up to the median and has a very long upper tail. The estimated costs associated with other essential goods and services would be equal to the average expenditure of these new reference households. As table 44 shows, in the case of Costa Rica, the estimates obtained using the reference quintile appear to be slightly higher than those obtained using the alternative choice of reference quintiles, with a difference of about 10 per cent in 2013 and 13 per cent in 2018. Estimates obtained from the alternative choice are lower than the

▶ Table 44. Comparison between the average expenditure of all households located below the median of total expenditure and the average expenditure of the reference quintile with regard to other essential goods and services, per adult equivalent, Costa Rica, 2013 and 2018

Other essential goods and services	Expenditure calculated using all households located below the median of total expenditure (colones)		Expenditure calculated using the households located in the reference quintile satisfying the 2,950 kcal baseline (colones)		Percentage difference	
	2013	2018	2013	2018	2013	2018
Clothing and footwear	6 341	5 701	6 749	5 807	6	2
Transport	9 930	11 313	12 618	15 370	27	36
Communications	6 535	8 672	7 341	9 134	12	5
Recreation and culture	7 598	7 151	8 098	7 307	7	2
Other goods and services	7 946	8 047	8 220	8 790	3	9
Non-consumption	12 483	13 695	12 952	15 249	4	11
Monthly expenditure per adult equivalent	50 834	54 580	55 978	61 657	10	13
Monthly expenditure for a family of three	113 261	122 985	125 679	139 776	11	14

Source: ILO estimates based on the 2013 and 2018 *Costa Rica National Household Income and Expenditure Surveys* (Costa Rica, INEC 2013 and 2018).

estimates obtained using the reference quintile because of the inclusion of households at the lower end of the income distribution, which likely do not have a decent living standard.

To overcome the issue encountered with the first alternative measure, for which the calculation of the average cost of other essential goods and services includes households at the lower end of the income distribution, a second alternative might simply be to consider the median costs over the entire distribution of expenditure. That is, for each expenditure group among other essential goods and services, the needs per adult equivalent can simply be estimated as the median expenditure over the whole population. When this alternative measure is applied to data from the socio-economic survey of Costa Rica, it can be seen that the estimates obtained from the reference quintile are around 15 per cent lower than the estimates obtained from considering the median expenditure values for all households (see table 45). In this particular example, estimates obtained from the baseline approach appear to be well bouded by those obtained using the two alternative relative measures. This reinforces confidence in the approach based on use of the reference quintile.

▶ Table 45. Comparison between the estimates obtained using the median expenditure per adult equivalent of all households and the estimates obtained using the reference quintile per adult equivalent for other essential goods and services expenditure, Costa Rica, 2013 and 2018

Other essential goods and services	Median expenditure per adult equivalent for all households (colones)		Expenditure calculated using the households located in the reference quintile satisfying the 2,950 kcal baseline, per adult equivalent (colones)		Percentage difference	
	2013	2018	2013	2018	2013	2018
Clothing and footwear	6 607	5 460	6 749	5 807	2.15	6.36
Transportation	13 792	17 428	12 618	15 370	–8.51	–11.81
Communications	8 538	11 955	7 341	9 134	–14.02	–23.60
Recreation and culture	10 000	7 942	8 098	7 307	–19.02	–7.99
Other goods and services	10 047	10 000	8 220	8 790	–18.18	–12.10
Non-consumption	16 288	20 000	12 952	15 249	–20.48	–23.76
Total	**65 272**	**72 783**	**55 978**	**61 657**	**–14.24**	**–15.29**

Source: ILO estimates based on the 2013 and 2018 *Costa Rica National Household Income and Expenditure Surveys* (Costa Rica, INEC 2013 and 2018).

6 Estimating a living wage

6. Estimating a living wage

In this final section, the estimates of the different expenditure dimensions considered in our multidimensional approach are used to calculate a living wage. This is a fairly straightforward stage in the methodology, as the cost of the different components of a decent standard of living have been already identified and estimated and now just need to be assembled. To arrive at a living wage estimate, two steps are necessary:

1. Estimate the total cost of the needs of workers and their families.
2. Estimate the wage sufficient to cover the total cost of the needs of workers and their families (also known as the living wage).

Once the estimates have been calculated, we assess how the living wage estimates compare with the minimum wage in force in the country or region of interest.

The chapter concludes by discussing two very important aspects of the process of estimating a living wage. These relate to, first, the need to regularly adjust the estimation over time to consider changes in the cost of living and patterns of consumption and, second, the importance of specifying whether estimates are gross or net, namely whether items such as social security contributions are included or not.

Step 1: Estimate the total cost of the needs of workers and their families

The first step consists of simply adding together the estimated cost of needs across the four categories of expenditure, namely food, housing, healthcare and education, and other essential goods and services. The cost of each of these needs was estimated for one family member, as well as for a reference family of representative size at the national or regional level. As explained in each of the sections on the different dimensions of needs, estimates for a whole reference family are obtained by multiplying the costs for one family member either by the coefficient of the corresponding equivalence scale or, in the case of healthcare and education, by the number of persons in the household. The sum of all these estimates for a family will yield an estimate of the total cost of living for a reference family size.

Table 46 provides an example for the case of Viet Nam, both at the national level and by minimum wage zone. At the national level, the total sum of the estimated costs of needs with regard to food, housing, healthcare and education and other essential goods and services for one member of the family amounts to 2,434,000 dong. The relevant coefficient was applied to each category of expenditure to convert the needs for one member of the family to those of the whole family (see table 47), as a result of which the cost of needs for a reference family size of four members in Viet Nam is estimated at 7,592,000 dong per month at the national level. As can be seen, the estimates vary from region to region, being the highest in zone 1 and the lowest in zone 4.

▶ Table 46. Monthly cost of each expenditure category for one adult equivalent and for a family of four, at national level and by minimum wage zone, Viet Nam, 2018

Expenditure category	Cost of the needs for one member of the family (thousand dong)					Cost of the needs for a family of four (thousand dong)				
	National level	Zone 1	Zone 2	Zone 3	Zone 4	National level	Zone 1	Zone 2	Zone 3	Zone 4
Food	1 021	1 384	1 252	1 152	949	3 411	4 667	4 229	3 879	3 140
Housing	439	801	693	418	328	1 245	2 274	1 968	1 192	926
Rent	355	646	592	326	258	1 006	1 834	1 680	928	728
Utilities	84	155	101	92	70	239	440	288	263	198
Healthcare and education	153	278	164	166	110	610	1 114	656	663	442
Healthcare	102	147	102	104	77	406	590	410	416	308
Education	51	131	62	62	33	204	524	246	247	134
Other essential goods and services	821	1 225	941	844	661	2 326	3 479	2 672	2 403	1 866
Non-durables	467	819	593	487	374	1 322	2 326	1 682	1 387	1 057
Durables	85	83	64	89	57	242	237	182	255	160
Food for festivities	99	138	108	95	93	282	392	307	270	261
Other	170	185	177	173	137	480	524	501	491	388
Total	**2 434**	**3 688**	**3 050**	**2 580**	**2 048**	**7 592**	**11 534**	**9 525**	**8 137**	**6 374**

Note: "Durables" include means of travel, communication devices, electronic devices, furniture, musical instruments and music devices. "Non-durables" include energy related expenditure (such as coal, diesel, etc.), shoes and clothing, transport, personal care products, cleaning products, repair and maintenance, entertainment, sport and leisure, and household linen. "Other" includes taxes, social security contributions, administrative charges, non-food expenditure related to festivities, and fund contributions for unexpected events.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

▶ Table 47. Coefficients used to convert the needs for one member of a family to those of a reference family size of four members, Viet Nam, 2018

Zone	Reference family size	Food (AEEI equivalence scale)	Housing and other essential goods and services (OECD equivalence scale)	Health and education (number of persons in the family)
National level	4	3.34	2.83	4
Zone 1		3.37	2.84	4
Zone 2		3.38	2.84	4
Zone 3		3.37	2.85	4
Zone 4		3.31	2.82	4

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Step 2: Estimate the wage sufficient to cover the total cost of the needs of workers and their families (also known as the living wage)

Having estimated the total living cost for a family of reference size, the wage sufficient to cover these needs is then estimated according to the number of adult income earners present in the household, which accounts for all earnings that are likely to be used to support household living costs. Therefore, in contrast to family size, the presence of working adults in a household has a reducing effect on living wages. Accordingly, to obtain an estimate of the living wage, the total living cost estimated for a reference family size is divided by the number of working adults in the household.

As for the choice of reference family size, the decision as to what is the most realistic measure of the number of working adults to be used as the denominator in the calculations is an important methodological choice and has a significant impact on the overall living wage level. In the present baseline methodology, the number of full-time working adults is set normatively at 1.5 for each family of more than one person. This decision is based on various reasons, as explained in the overview of the methodology (see Chapter 1). Estimates using 1 and 2 working adults are also considered in addition to the results based on the hypothesis of 1.5 working adults per family, so that a full range of living wage estimates can be provided to serve as relevant information in the context of minimum wage setting. In any case, social partners may wish to explore different scenarios regarding the number of working adults within a family in the context of wage setting.

Table 48 sets out an illustrative example of estimates of living wage levels in Viet Nam, using three different assumptions for the number of full-time working adults in a reference family of four members: (a) 1 full-time worker; (b) 1.5 full-time workers; and (c) 2 full-time workers. On the basis of these three scenarios, the estimated monthly living wage levels at the national level in 2018 are calculated as follows:

(a) For 1 full-time working adult, the monthly living wage level ranges from 6,374,000 dong for zone 4 to 11,534,000 dong for zone 1.

(b) For 1.5 full-time working adults, the monthly living wage level ranges from 4,249,000 dong for zone 4 to 7,689,000 dong for zone 1.

(c) For 2 full-time working adults, the monthly living wage levels ranges from 3,187,000 dong for zone 4 to 5,767,000 dong for zone 1.

▶ **Table 48. Estimate of wage level sufficient to cover the basic needs of a family of four, at the national level and by minimum wage zone, Viet Nam, 2018**

Zones	Monthly cost of the needs for a family of four (thousand dong)	Number of full-time working adults in the family	Monthly living wage estimate (thousand dong)
National level	7 952	1	7 592
Zone 1	11 534		11 534
Zone 2	9 525		9 525
Zone 3	8 137		8 137
Zone 4	6 374		6 374
National level	7 592	1.5	5 061
Zone 1	11 534		7 689
Zone 2	9 525		6 350
Zone 3	8 137		5 425
Zone 4	6 374		4 249
National level	7 592	2	3 796
Zone 1	11 534		5 767
Zone 2	9 525		4 762
Zone 3	8 137		4 069
Zone 4	6 374		3 187

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Minimum wage levels and evolution versus living wage estimates

Once the living wage estimates have been obtained, one interesting exercise is to compare them to the statutory minimum wage in force in the country or region in question. Comparing the living wage with minimum wage levels allows analysts to assess whether minimum wage earners are receiving sufficient income to afford a decent standard of living for themselves and their families. Before drawing any conclusions, however, it is important to remember that these results contribute to only one of the criteria that need to be taken into account when setting minimum wage levels. This information needs to be balanced by the consideration of economic factors, including the requirements of economic development, levels of productivity and the desirability of attaining and maintaining a high level of employment. An appropriate balance between these two sets of considerations is essential to ensure that minimum wages are adapted to the national context and that both the effective protection of workers and the development of sustainable enterprises are considered.

As an illustrative example, figure 14 compares the existing minimum wage levels and the estimated living wage levels for various family sizes in Viet Nam. Results show that, in the four minimum wage zones in 2018, the minimum wage level seems to have been sufficient to cover the needs of one adult working full time or a couple composed of two adults with one working full time and one working half time. However, in all four zones, the minimum wage in force may be insufficient to cover the estimated needs of families of three or four members if we assume that each family has 1.5 working adults.

▶ **Figure 14. Living wage estimates for various family sizes, assuming 1.5 working adults per family, versus minimum wage in force, by minimum wage zone, Viet Nam, 2018 (thousand dong)**

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

Regular adjustment of living wage estimates

It is of prime importance to regularly update living wage estimates. In the long term, the consumption patterns of households can change owing both to developments in the economic situation and to evolution in social norms. In the shorter term, however, price inflation is the key factor, as it affects purchasing power, especially for the most modest households.

In most countries where they are available, household income and expenditure surveys are conducted regularly by the national statistical offices. In Ethiopia, Indonesia and Viet Nam, for instance, they are usually conducted every two years, while in Costa Rica they are implemented every five years (see table 49). This regular implementation offers the opportunity to frequently update living wage estimates, taking into account changes both in the cost of living and in the consumption patterns of households.

In the intervening years between surveys, price indices should be used to adjust the estimates according to changes in the cost of living. Furthermore, in some countries, detailed price indices for groups of expenditure items are available, which enable the cost of food, housing and other expenditure to be adjusted separately, thereby better reflecting changes in the cost of living.

▶ **Table 49. Frequency of implementation of income and expenditure surveys, Costa Rica, Ethiopia, Indonesia and Viet Nam**

Country	Name of the survey	Frequency of implementation
Viet Nam	Viet Nam Household Living Standards Survey (VHLSS)	Every two years
Costa Rica	Costa Rica National Household Income and Expenditure Survey (ENIGH)	Every five years
Indonesia	Indonesia National Socio-economic Survey (SUSENAS)	Every two years
Ethiopia	Ethiopia Socio-economic Survey (ESS)	Every two to three years

Source: ILO own elaboration.

There are good reasons to believe that, in some cases, households at the lower end of the income distribution face higher levels of inflation than the rest of the population. According to the ILO's *Global Wage Report 2022–23* (ILO 2022), in several countries rising inflation has a greater cost-of-living impact on lower-income households because such households spend most of their disposable income on essential goods and services, which generally experience greater price increases than non-essential items. For example, in Mexico, households in the bottom decile spend 42 per cent of their income on food, as opposed to 14 per cent for the top decile. The authors of the report estimated that the increase in the cost of living among low-income households could be between 1 and 4 percentage points higher than that faced by high-income households.

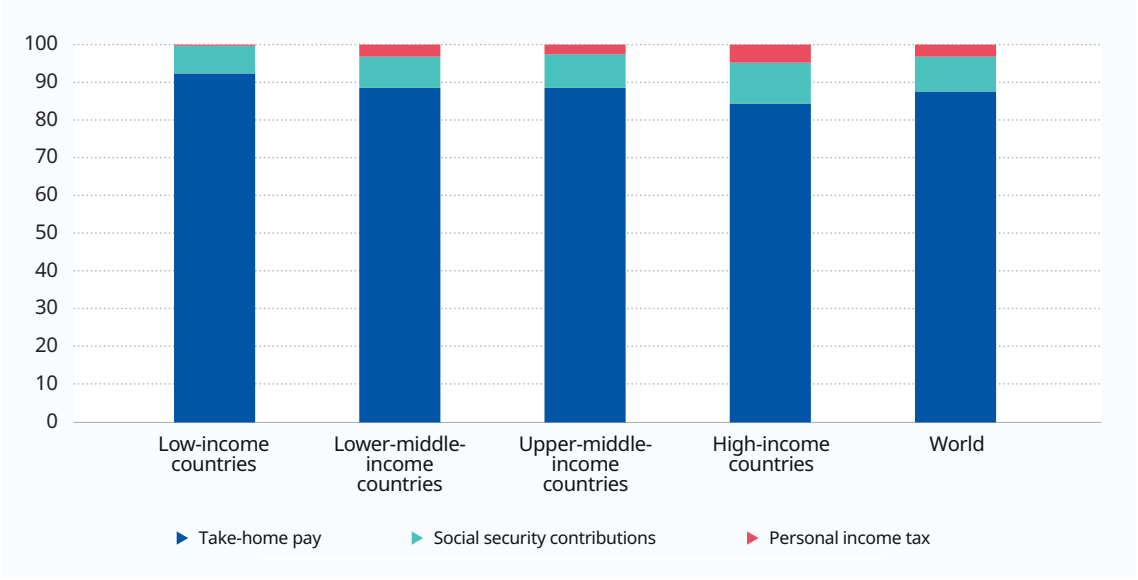
In such a context, there is a risk that using the average consumer price index to adjust living wage estimates could lead to an underestimation of the needs of workers and their families. The use of detailed price information for items could, to some extent, limit this risk. Therefore, when updating living wage estimates, and in the absence of a new income and expenditure survey, it is necessary to work closely with the national statistical office to obtain the most detailed information on price evolution.

Importance of specifying whether living wage estimates are gross or net

A very important aspect of the estimation of living wages relates to whether living wage estimates are net of the deductions of taxes and social security contributions from workers' gross wages. It should thus be clearly indicated whether the estimated living wage is the net wage amount required to meet the needs of workers and their families or whether the cost of items such as taxes and social security contributions are included in the living wage estimate. In fact, according to the ILO principles for estimating living wages (Appendix, paragraph 8, point f), any methodology should specify whether estimates are gross or net, namely whether items such as social security contributions are included or not.

This is crucial because, to satisfy their needs, individuals can only use the part of their wages that remains available to them after the payment of income taxes, social security contributions and any other levies (ILO 2020). Furthermore, the difference between net and gross estimates can vary significantly. For example, according to a review of 42 countries, taxes and social security contributions account, on average, for approximately 12 per cent of the gross minimum wage for a single individual with no children. This figure varies across countries, averaging 7 per cent in low-income countries, 11 per cent in lower- and upper-middle-income countries and 15 per cent in high-income countries (see figure 15).

Figure 15. Decomposition of gross minimum wage in a sample of 42 countries, by country income level, 2019 (percentage)



Source: ILO, own elaboration, based on accessible information for 42 countries. See more details in ILO (2020).

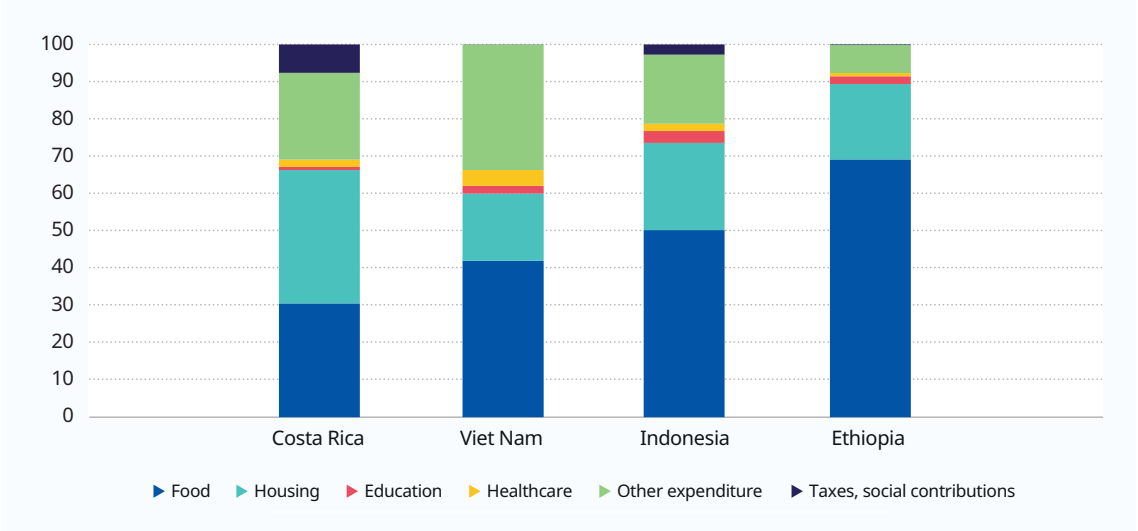
In income and expenditure surveys, taxes and social security contributions are, in principle, recorded; in the present methodology, they would appear in the category that estimates the cost of other essential goods and services. Therefore, this methodology could, in theory, produce estimates of the gross living wage.

However, experience in the pilot countries indicates that income and expenditure surveys often fail to capture these expenses accurately. For instance, in Viet Nam, the household income and expenditure survey does not seem to adequately capture expenses for taxes and social security contributions, since – in the data – they appear to account for only 0.04 per cent of the total estimated needs (see figure 16), which is clearly an underestimation of the actual level of taxes and social contributions required as per the national legislation (which should be 10.5 per cent).

Furthermore, even when information on taxes and social security contributions are accurately reported in surveys, the information on social security contributions is often incomplete (Sowa and Behrendt 2006). One of the reasons for this is that, in many countries, employees' contributions are collected directly by employers on behalf of the social security authorities and are therefore not reported as expenditure by households.

In addition, in many countries, the employer is responsible for calculating personal income taxes, withholding them from employees' wages and forwarding the relevant amount to the tax authority, as in Costa Rica, Ethiopia and Indonesia.

▶ Figure 16. Distribution of the cost of the needs of workers and their families by component, Costa Rica, Ethiopia, Indonesia and Viet Nam (percentage)



Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018), the 2018 *Costa Rica National Household Income and Expenditure Survey* (Costa Rica, INEC 2018), the 2018/19 *Ethiopia Socio-economic Survey* (Ethiopia, CSSA 2019) and the 2018 *Indonesia National Socio-economic Survey* (Indonesia, Statistics Indonesia 2018).

Several additional challenges are faced when estimating expenditure on personal income taxes and social security contributions on the basis of data from income and expenditure surveys. Different surveys often use different methodologies, definitions and reference periods, leading to inconsistencies in the data collected. These discrepancies make it difficult to aggregate and analyse data for tax and social security purposes (Torres, Mellbye and Brys 2012; Anand and Segal 2015). For example, in the pilot countries, surveys lacked a specific variable for personal income tax and often aggregated it with other expenditures or types of taxes. Lastly, tax systems and social security contributions are often complex and can vary from one region to another; survey respondents may not fully understand these complexities, leading to incorrect reporting of taxable income (Torres, Mellbye and Brys 2012).

In light of these limitations and to ensure accurate estimates of workers' needs, the present methodology proposes an alternative procedure, which is designed to better take into account taxes and social security contributions and produce gross estimates of the living wage. This post-estimate adjustment can be summarized in the following three steps.

First, all expenditure related to taxes and social security contributions reported by households in the survey should be highlighted within the category of other essential goods and services. Once identified, these taxes and social security expenditures should be assessed and, if not captured accurately by the survey, should be excluded from the calculation of the needs of workers and their families. This exclusion ensures the estimation of a net living wage.

Table 50 presents an estimate of the cost of the needs for a family of four by expenditure category in Viet Nam. As can be observed, taxes and social security contributions represent only 0.04 per cent of expenditure, which highlights the failure to accurately account for this group of expenses. Therefore, these values are excluded in order to provide a net living wage estimate.

▶ Table 50. Net living wage based on the needs of a family of four, Viet Nam, 2018

	Cost of needs for a family of four (thousand dong)	Percentage of the total needs
Food	3 411	44.93
Housing	1 245	16.39
Rent	1 006	13.25
Utilities	239	3.14
Healthcare and education	610	8.04
Healthcare	406	5.35
Education	204	2.69
Other essential goods and services	2 326	30.64
Non-durables	1 322	17.42
Durables	242	3.18
Taxes and social security	3	0.04
Food for festivities	282	3.71
Other	477	6.29
Total	**7 592**	
Estimated net total[1]	**7 589**	
(Number of working adults	1.5)	
Net living wage	**5 060**	

[1] Total cost of needs without taxes and social security contributions. Here "other" excludes taxes and social security expenditures.

Source: ILO estimates based on the 2018 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

The second step involves a careful review of the relevant legislation to determine the applicable percentages for social security contributions and personal income tax. This review must be comprehensive, considering all variations in tax laws and social security rates that may apply to different income brackets or family situations, as well as any allowances. In Viet Nam, employees must contribute 10.5 per cent of their income to social security. The personal income tax rate for a monthly taxable income of up to 5 million dong is 5 per cent. However, owing to the personal tax deduction of up to 11 million dong, the personal income tax rate for individuals within this bracket is effectively zero, as the deduction exceeds the taxable income threshold (IPC South Vietnam, n.d.).

Lastly, the social security rate and the personal income tax rate should be added to the net living wage estimate to derive the gross living wage. This step converts the net living wage into a gross figure, incorporating the necessary adjustments for taxes and social security contributions (see table 51).

▶ Table 51. Estimation of gross living wage, Viet Nam, 2018 (thousand dong)

Net living wage	Social security at 10.5%	Personal income tax at 0.0%	Gross living wage
5 060	531	0	5 591

Source: ILO estimates based on the 2020 *Viet Nam Household Living Standards Survey* (Viet Nam, GSO 2018).

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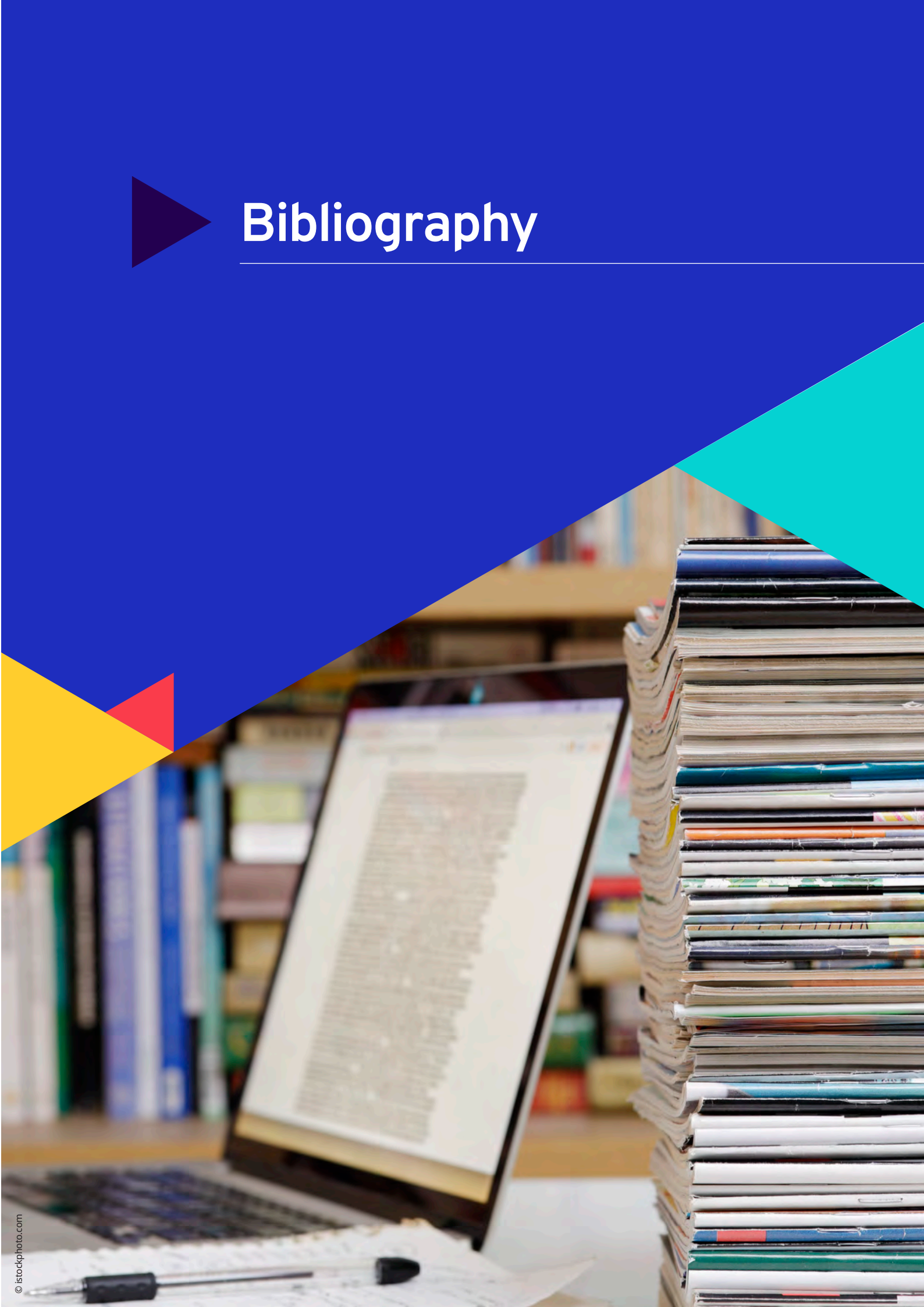

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Appendix. Conclusions of the Meeting of Experts on wage policies, including living wages

Conclusions

1. Having met in Geneva on 19-23 February 2024, the meeting of experts on wage policies, including living wages, recalled that wage policies have been a central subject of the ILO since its creation in 1919 as reflected in its Constitution, several of its Declarations and international labour standards.

2. The preamble of the ILO Constitution calls for the provision of "an adequate living wage". The Declaration of Philadelphia (1944) calls on the ILO to promote "policies in regard to wages and earnings, hours and other conditions of work calculated to ensure a just share of the fruits of progress to all, and a minimum living wage to all employed and in need of such protection". The ILO Centenary Declaration for the Future of Work (2019) states that "all workers should enjoy adequate protection in accordance with the Decent Work Agenda, taking into account ... an adequate minimum wage, statutory or negotiated". The list of ILO international labour standards of general or sectoral application that are particularly relevant for wages are presented in the Appendix. While the ILO regulatory framework for wages is extensive, its effective implementation remains a challenge, including in supply chains.

3. Over the years, there have been positive trends in real wages. Globally, real wages have increased every year since 2006, until the decline in real wages in 2022 due to the sharp acceleration of price inflation. During this period, on average, real wages have increased more rapidly in developing countries than in high-income countries. Structural transformation and a comprehensive set of policy reforms have resulted in average productivity growth as a key factor enabling real wage increases. However, in many high-income countries, there has been a decoupling between productivity gains and wages and a declining labour income share in GDP. Millions of workers – in the formal and informal economy - across the world continue to earn very low wages and they are still living in poverty. Decent wages are central to economic and social development and essential in reducing poverty and inequality, as well as in ensuring a decent and dignified life and in advancing social justice.

I. Key institutions and ILO principles of wage setting

4. In accordance with international labour standards, wage-setting practices should be based on the following institutions and principles:

(a) **Collective bargaining and tripartite social dialogue:** Collective bargaining and/or statutory minimum wage fixing through tripartite social dialogue should be the proper modality for setting and adjusting wages. National practices vary widely. While in some countries tripartite social dialogue takes place mostly in statutory minimum wage systems, in others wage setting is carried out solely by social partners through collective bargaining. In most countries, statutory minimum wages and collective wage bargaining coexist.

- Collective bargaining, underpinned by freedom of association, is an important mechanism for determining wages. Good faith collective bargaining aimed at reaching mutually acceptable agreements can result in a more equitable distribution of economic growth. A strong and well-informed collective bargaining process requires that all social partners have access to the same information. Public and private employers should, at the request of workers' organizations, make available such information on the economic and social situation of the negotiating unit and the undertaking as a whole as is necessary for meaningful negotiations. Where the disclosure of some of this information could be prejudicial to the undertaking, its communication may be made conditional upon a commitment that it would be regarded as confidential to the extent required. The information to be made available may be agreed upon between the parties to collective bargaining such that their autonomy is respected and an enabling environment for collective bargaining is provided for. Collective bargaining coverage has declined in recent decades.
- Tripartite social dialogue is at the heart of an adequate statutory minimum wage system. Wage-setting processes through social dialogue should preserve and respect the autonomy and critical role of employers' and workers' organizations. Although a majority of ILO Member States set minimum wages only after consultation with employers' and workers' organizations, such consultations should be more effective.

(b) **Take into account the needs of workers and their families, and economic factors:** Both the needs of workers and their families and economic factors should be considered in setting wages. As provided in the Minimum Wage Fixing Convention, 1970 (No.131), which remains the norm for the establishment of minimum wage systems, the elements to be taken into account when determining minimum wages are:

- the needs of workers and their families, taking into account the general level of wages in the country, the cost of living, social security benefits, and the relative living standards of other groups;
- economic factors, including the requirements of economic development, levels of productivity and the desirability of attaining and maintaining a high level of employment.

(c) **Ensure gender equality and non-discrimination:** wage policies and wage-setting mechanisms should promote gender equality, equity, and non-discrimination.

(d) **Utilize robust data and statistics for an evidence-based approach:** Designing and implementing adequate wage policies require representative data, timely and reliable statistics and data analysis. Unfortunately, in many countries, national statistical offices are under-resourced and timely data is not available.

(e) **Consider national circumstances and root causes of low pay.** There is no one-size-fits-all solution when it comes to wage-setting processes. There is also a need to tackle root causes of low pay.

II. The ILO living wage

5. In line with the ILO Constitution and the Philadelphia Declaration, and consistent with the spirit of the Universal Declaration of Human Rights (UDHR), the ILO denotes that the concept of the living wage is:

- the wage level that is necessary to afford a decent standard of living for workers and their families, taking into account the country circumstances and calculated for the work performed during the normal hours of work;

- calculated in accordance with the ILO's principles of estimating the living wage, as outlined below;
- to be achieved through the wage-setting process in line with ILO principles on wage setting.

6. The "normal hours" of work refers to the time at the disposal of the employer within the legal working time determined by regulations and national practices. This definition excludes overtime.

7. The concept of a living wage is consistent with the spirit of Article 7 of the International Covenant on Economic, Social and Cultural Rights (The Covenant) where State Parties "recognize the right of everyone to the enjoyment of just and favourable conditions of work, which ensure, in particular: (a) [r]emuneration which provides all workers, as a minimum, with (i) [f]air wages and equal remuneration for work of equal value without distinction of any kind, in particular women being guaranteed conditions of work not inferior to those enjoyed by men, with equal pay for equal work (ii) a decent living for themselves and their families in accordance with the provision of the present Covenant"; and also with that of Article 23 (para. 3) of the UDHR which recognizes "... the right to just and favourable remuneration ensuring for himself [the worker] and his[/her] family an existence worthy of human dignity...". The Covenant and the UDHR are internationally recognized human rights instruments. In line with the UN Guiding Principles on Business and Human Rights and the ILO Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy (MNE Declaration), States have an obligation to protect human rights; and all enterprises, regardless of their size, sector, operational context, ownership and structure, should respect human rights throughout their operations.

III. Methodologies to estimate living wages

Principles that the estimation of living wages should follow:

8. Living wage estimates translate the living wage concept into a national monetary value. These estimates can contribute to and inform an evidence-based social dialogue for wage setting. Living wage methodologies should follow a number of principles:

(a) estimation of the needs of workers and their families through evidence-based methodologies;

(b) consultation with representative employers' and workers' organizations on living wage estimates and involvement of social partners throughout their development, with a view to ensuring national and/or local ownership;

(c) transparency, including details with regard to data sources and methods of processing, that are open to scrutiny, are comprehensive and replicable;

(d) robustness of the data in terms of representativeness and transparent data collection methods;

(e) timely public availability of the estimates, data and methodologies;

(f) specification on whether estimates are gross or net, namely whether items such as social security contributions are included or not;

(g) regular adjustments to consider changes in the cost of living and the patterns of consumption;

(h) quality control, including sound technical review, validation, as well as periodic review for continuous improvements;

(i) promotion of gender equality and non-discrimination;

(j) consideration of the regional or local context and socio-economic and cultural realities.

General considerations regarding methodologies

9. Methodologies to estimate living wages should be based on an identification and assessment of a basket of goods, using local prices of the costs of at least the following components: food, housing, health and education, and other necessary goods and services, in accordance with national circumstances. This basket should provide for a decent living standard of the worker and his/her family. For some elements in this basket, international standards are well-established and should be used. Furthermore, the methodology should be clear on the family size and the number of wage earners. Living wage estimates should be disaggregated by components and presented in various wage units, including hourly, monthly, quarterly and annual figures, and should be the result of robust empirical analysis of the population, including surveys and censuses, at country or regional level.

IV. Review of current living wage initiatives

10. In recent years, there has been a sharp increase in voluntary initiatives on living wages, including by multinational enterprises, individually or as part of a multi-stakeholder initiative. These initiatives present different degrees of advancement, and they have given significant visibility to the concept of a living wage. Many of these initiatives produce estimates that are above the existing legal minimum wage. Consequently, in some cases, by paying a wage based on a living wage estimate, multinational enterprises have improved the living standard for some workers and their families. However, many of these initiatives do not yet take into account ILO principles of wage setting, particularly tripartite social dialogue and/or collective bargaining nor do they take into account other national institutions involved in such determination such as minimum wage commissions. Local context, and root causes of low pay, as well as economic factors are also not always considered, particularly in operationalizing living wages. Alignment of the living wage initiatives with the ILO principles of wage-setting processes is necessary.

V. The operationalization of living wages

11. The operationalization of living wages should not be a one-size-fits-all approach and should reflect local or regional differences within countries. Both tripartite and bipartite social dialogue, particularly collective bargaining, are crucial mechanisms to operationalize living wages. Social dialogue, including collective bargaining, contributes to the fair distribution of the gains generated through value-added along global supply chains.

12. Any sustainable strategy to promote living wages should go beyond the realm of wage-setting mechanisms alone and include a broader consideration of factors, such as sustainable economic growth and structural transformation, to raise productivity. It should also ensure that productivity growth results in wage growth – which is possible only through strong and effective labour market institutions and social dialogue.

13. The operationalization of the concept of a living wage within the broader wage-setting process should be evidence-based and take into account the ILO key principles of wage-setting processes already mentioned, in particular:

(a) **Considering the needs of workers and their families and economic factors in wage-setting processes.** The needs of workers and their families and economic factors are the two pillars of wage-setting processes. Living wage estimates should follow the principles or requirements identified earlier and should be used alongside information on economic factors.

(b) **Strengthening social dialogue and empowering wage-setting institutions, particularly collective bargaining.** This includes strengthening the capacity of wage-setting institutions and the ability of social partners to bargain collectively on wage issues and/or to participate in tripartite social dialogue on wage policies. Collective bargaining can take place at different levels and can include different elements such as wage payment systems, wage structure, or wage composition.

(c) **Promoting incremental progression from minimum wages to living wages.** Living wages should be achieved through wage-setting processes in line with ILO principles on wage-setting, either through the negotiation of statutory minimum wages or collective bargaining, taking into account national circumstances and economic factors. Minimum wage-setting systems should be strengthened in line with Convention No. 131.

(d) **Ensuring national and/or local ownership.** The operationalization of living wages should be a process anchored at national level. National and local ownership, with participation of social partners, is required for successful implementation. This should ensure that national and local circumstances are considered.

(e) **Ensuring gender equality and non-discrimination.** The operationalization of living wages should aim to close gender pay gaps and end wage discrimination, taking as a basis the principle of equal pay for work of equal value.

(f) **Using robust and reliable data and statistics for an evidence-based approach.** Information and data are needed to support wage-setting institutions and the operationalization of living wages. Information and data on economic factors, labour market characteristics, sectoral context and enterprise performance are needed for an evidence-based wage-setting process and periodic living wage adjustments.

(g) **Taking into account the root causes and challenges of low pay, such as unfair distribution of value, low total factor productivity, informality, weak institutions and compliance systems.** This also requires extending the coverage of minimum wage systems to all workers to redress the exclusion of certain categories of workers from legal coverage. Creating an enabling environment for sustainable enterprises, as well as measures to raise productivity, are key to allowing sustainable wage growth and supporting the payment of higher wages. Furthermore, efforts to operationalize living wages need to be accompanied by measures to encourage formalization, in line with the Transition from the Informal to the Formal Economy Recommendation, 2015 (No. 204).

(h) **Recognizing the role of the State.** Governments should invest in the quality and delivery of public services, including health, education, social protection and infrastructure to contribute to realizing a decent standard of living. Furthermore, strengthening compliance systems, such as labour inspectorates and other relevant authorities, is key to ensuring that workers receive the wages to which they are entitled.

VI. Recommendations for future action by the Office

14. The Office should continue to provide support toward strengthening wage-setting processes by:

(a) promoting the ratification and implementation of all relevant Conventions and international labour standards;

(b) providing technical assistance to tripartite constituents to strengthen wage-setting institutions, including minimum wage fixing through more effective social dialogue, including collective bargaining;

(c) producing guidelines covering a review of policies and wage-setting processes;

(d) assisting governments in gathering data and information for evidence-based wage-setting and meaningful collective bargaining in line with relevant international labour standards and the ILO integrated strategy for the promotion and implementation of the right to collective bargaining endorsed by the Governing Body at its 349th Session, and make it available to social partners.

(e) developing an assessment framework for wage setting taking into consideration Convention No. 131, including various economic factors, such as the requirements of economic development, levels of productivity, the desirability of acquiring and maintaining a high level of employment, economic sustainability of enterprises, industry-specific factors, macroeconomic conditions, and labour market conditions, including levels of informality;

(f) building on the ILO Strategy on Decent Work in Supply Chains endorsed by the Governing Body at its 347th Session, promoting the uptake of the principles of the MNE Declaration;

(g) producing guidance documents for employers and for workers for wage-setting processes and providing capacity building and technical assistance to constituents on wage setting.

15. The Office should carry out a set of activities related to living wages by:

(a) raising awareness on living wage, including through guidance and information;

(b) engaging with living wage initiatives to promote alignment with ILO living wage principles;

(c) providing, upon request, technical assistance to constituents on the methodology developed by the ILO to estimate the needs of workers and their families for the purpose of a living wage;

(d) reviewing the ILO methodology to estimate the needs of workers and their families to align it with the principles for estimating a living wage;

(e) developing a communication strategy on living wage, the ILO principles for wage setting and the ILO methodology for living wage setting. The ILO Helpdesk for Business on international labour standards can be a relevant tool and source of information in this regard;

(f) undertaking further research on living wage trends and developments, sharing knowledge and lessons learned; and

(g) promoting the outcome of the meeting in the multilateral system, and through partnerships with other UN bodies, including through the Global Coalition for Social Justice.

16. The Office should continue its activities, notably by:

(a) offering technical assistance to constituents on skills development, productivity improvement, and strengthening an enabling environment for sustainable enterprises, as well as employment, social protection and macroeconomic policies for decent employment generation;

(b) providing technical assistance to support transition to formality in line with Recommendation No. 204;

(c) supporting constituents on data collection, including through labour force and establishments surveys;

(d) strengthening the effectiveness of labour inspectorates and other relevant authorities to enhance compliance;

(e) supporting Member States in the development and provision of affordable, accessible and quality public services.

Appendix. Non-exhaustive list of international labour standards related to wage policies and wage setting

ILO conventions

Fundamental conventions

Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)

Right to Organise and Collective Bargaining Convention, 1949 (No. 98)

Equal Remuneration Convention, 1951 (No. 100)

Discrimination (Employment and Occupation) Convention, 1958 (No. 111)

Governance conventions

Labour Inspection Convention, 1947 (No. 81)

Tripartite Consultation (International Labour Standards) Convention, 1976 (No. 144)

Labour Inspection (Agriculture) Convention, 1969 (No. 129)

Technical conventions

Minimum Wage-Fixing Machinery Convention, 1928 (No. 26)
[instrument with interim status]

Labour Clauses (Public Contracts) Convention, 1949 (No. 94)

Protection of Wages Convention, 1949 (No. 95)

Minimum Wage Fixing Machinery (Agriculture) Convention, 1951 (No. 99)
[instrument with interim status]

Plantations Convention, 1958 (No. 110)

Minimum Wage Fixing Convention, 1970 (No. 131)

Labour Administration Convention, 1978 (No. 150)

Labour Relations (Public Service) Convention, 1978 (No. 151)

Collective Bargaining Convention, 1981 (No. 154)

Protection of Workers' Claims (Employers' Insolvency) Convention, 1992 (No. 173)

Part-Time Work Convention, 1994 (No. 175)

Home Work Convention, 1996 (No. 177)

Private Employment Agencies Convention, 1997 (No. 181)

Maritime Labour Convention, 2006

Work in Fishing Convention, 2007 (No. 188)

Domestic Workers Convention, 2011 (No. 189)

ILO recommendations

Minimum Wage-Fixing Machinery Recommendation, 1928 (No. 30)
[instrument with interim status]

Protection of Wages Recommendation, 1949 (No. 85)

Labour Clauses (Public Contracts) Recommendation, 1949 (No. 84)

Minimum Wage-Fixing Machinery (Agriculture) Recommendation, 1951 (No. 89)
[instrument with interim status]

Plantations Recommendation, 1958 (No. 110)

Minimum Wage Fixing Recommendation, 1970 (No. 135)

Workers' Representatives Recommendation, 1971 (No. 143)

Collective Bargaining Recommendation, 1981 (No. 163)

Protection of Workers' Claims (Employer's Insolvency) Recommendation, 1992 (No. 180)

Part-Time Work Recommendation, 1994 (No. 182)

Home Work Recommendation, 1996 (No. 184)

Transition from the Informal to the Formal Economy Recommendation, 2015 (No. 204)

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