Timor-Leste Population
and Housing Census 2015

Analytical Report on
Housing Characteristics and Amenities

Volume 8

Timor-Leste Population and Housing Census 2015

Thematic Report Volume 8

Analytical Report on Housing Characteristics and Amenities

Foreword

The 2015 Timor-Leste Population and Housing Census with the theme **"Census from people to people: Be part of it"** was conducted in July 2015 on a *de facto* basis by the General Directorate of Statistics, Minister of Finance. The 2015 Census is the third after those conducted in 2004 and 2010 (post independent Timor-Leste) and fifth after the 1980 and 1990 Censuses, both taken in Indonesian times. This Census was undertaken within the provision of the Statistics Decree Law No. 17/2003 and the 2015 Population and Housing Census Government Resolution no. 11/2014 of 9 April 2014.

The main objective of the 2015 Census was to collect, analyze and effectively disseminate demographic and socio-economic information required for policy and programme formulation, decision making in planning and administrative processes, and research. The Census preliminary results were published in Volume 1 on 21 October 2015 and were launched by His Excellency the Prime Minister of RDTL Dr. Rui Maria de Araújo. The 2015 Census priority tables were published in three volumes: 2, 3 and 4, and launched by the Vice Minister of Finance Eng. Helder Lopes on 17 November 2016. The 'Sensus fo Fila fali' (returning back the results of the Census) was launched by His Excellency Minister of State Dr. Deonisio Babo Soares on behalf of the Prime Minister of RDTL on 2 March 2017. After that an ambitious "Sensus Fo Fila Fali" project was undertaken by the General Directorate of Statistics, Ministry of Finance that culminated in a Census report for each of the 442 sucos in the country.

This fourth phase comprises drafting of analytical reports covering Census thematic topics including fertility, marriage, mortality, migration, population projections, education, labour force, housing, agriculture, gender, youth and an atlas. The preparation of these reports was a collaborative effort between the Government of Timor-Leste, the United Nations Population Fund (UNFPA), the United Nations Children's Fund (UNICEF), the International Labour Organisation (ILO) and the Food and Agriculture Organisation (FAO). Drafting of the thematic reports involved local and international experts. The reports were authored under the supervision and guidance of the Census Technical Specialist from UNFPA. The authors were recruited on a competitive basis, ensuring that they had adequate knowledge of the topics they were to analyse.

All staff at the General Directorate of Statistics, Ministry of Finance and especially the Director General and the Director of System and Reports and his team are commended for their commitment and tireless efforts to successfully undertake all phases of the Census including the thematic analysis exercise.

The Government of Timor-Leste wishes to extend its sincere gratitude to the United Nations Population Fund (UNFPA), the United Nations Children's Fund (UNICEF), the International Labour Organisation (ILO) and the Food and Agriculture Organisation (FAO) for providing technical, financial and administrative support throughout the Census process, and in particular acknowledges the contribution of the authors of each thematic report.

Last but not least, all Timorese people deserve special praise for their patience and willingness to provide the requisite information which forms the basis of these reports and hence benchmark information for development. We in the Ministry of Finance and Government as a whole hope that the data contained in these thematic reports will be fully utilized in the national development planning process by all stakeholders for the welfare of the Timorese people.

Sara Lobo Brites
Vice - Minister and Acting Minister of Finance

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LIST OF ABBREVIATIONS

DHS   Demographic and Health Survey

FAO   Food and Agricultural Organization of the United Nations

MDGs   Millennium Development Goals

OHCHR   United Nations Office of the High Commissioner for Human Rights

SDGs   Sustainable Development Goals

UNICEF   United Nations Children's Fund

WHO   World Health Organisation

EXECUTIVE SUMMARY

This analytical report on housing characteristics and amenities presents data from the 2015 Population and Housing Census covering approximately 205,000 private households in Timor-Leste. The report explores general demographic characteristics, female headed households, construction materials used for walls, floors and roof, fuels used for cooking and lighting, as well as access to drinking water and sanitation. These indicators, when compared over time, allow for measuring progress towards improving the living conditions of the population, as well as towards achieving the Sustainable Development Goals set by the United Nations in 2015.

Household characteristics. The average household size in Timor-Leste is 5.8, significantly higher than in neighbouring countries in the region. Comparing Census data over time shows that there has virtually been no change in household size since 2010. Single person households are still an exception. Household heads in urban areas tend to be younger than in rural areas. While the average age of household heads in Dili is 42 years, for all other municipalities combined the average age of household heads is 50, which could be interpreted as an indicator of an ageing rural population.

Female headed households. 32,000 households in Timor-Leste are headed by a woman, which equates to 16% of all households. In many aspects, female headed households are different from those with a male household head. In general, female household heads have a much lower level of education than male heads. In some municipalities, less than 20% of female household heads acquired any form of formal education. Throughout, these proportions are significantly higher for male household heads. The highest levels of household heads' education, male and female, can be found in Dili, the lowest in Ermera and Oecussi.

Nearly all male household heads are married, while 41% of female household heads are widowed. As for economic activities, female household heads are less likely to work as employees in the public or private sector, and far more likely to be own-account workers. Households with a female household head tend to be smaller than those headed by a male. A third of FHHs are either single-person or 2-person households, whereas this is only the case for 1 out of 10 male headed households.

Building materials. In general, there is a marked trend towards the use of more modern, more durable building materials, which indicates a rise in the overall quality of housing. For the construction of external walls, concrete and bricks are now the preferred choice, while the use of bamboo is decreasing. Similarly, durable floor materials are on the rise, while there is a marked fall in the use of non-durable flooring materials. A similar trend can be observed for roof materials. However, this overall increase in the use of durable, modern building materials is mainly driven by Dili. In the municipalities, more than 70% of dwellings are using bamboo, wood, mud, or similar traditional materials for the construction of external walls, and 1 out of four dwellings in rural areas still has a 'traditional' roof made of palm leaves, thatch or grass.

Water and Sanitation. Timor-Leste had made good progress towards achieving the Millennium Development Goals on water and sanitation, but more effort is needed to work towards the Sustainable Development Goals, in particular in achieving access to safely managed drinking water and sanitation for all by 2030. At the national level, more than half of households now have access to outdoor/public taps or pumps, but so far, less than 1 in 10 households has access to a safely managed water source. In rural areas, nearly a third of all households still have to rely on surface water or water from an unimproved source.

As for sanitation, progress has been made since the 2010 Census, however, at the national level, 18% of households are still practicing open defecation. In rural areas, 51% of households either practice open defecation or have to use an unimproved toilet facility, which contributes to the spread of water and sanitation related diseases, causing costs for both people and the economy.

Energy. The use of clean fuel for lighting has doubled since the 2010 Census. In 2015, 82% of households in Timor-Leste used either electricity or solar as their main source of energy for lighting. When it comes to cooking fuels, however, progress has been limited. In rural areas, 92% of households are still using unclean cooking fuels like wood. This proportion is only slightly lower (82%) at the national level. The use of unclean cooking fuels poses a serious health risk due to household members' prolonged exposure to micro-particles, and is associated with a number of respiratory illnesses and diseases.

Household assets. Household assets are another proxy-measure of living standards. In 2015, more than ¾ of households (81%) had access to either a landline or a mobile phone. Differences between urban and rural areas are striking. While in Dili every other household (45%) owns a fridge/freezer, this is true for only 6% of households in rural areas. Similarly, 46% of households in Dili own a motorbike, while in some municipalities this proportion is as low as 1 in 10.

Housing adequacy. Again, there is a striking difference between rural and urban areas, Dili in particular. In Dili, 80% of dwellings are either of the highest or second highest quality, and there are no dwellings in the bottom category. In a number of municipalities, however, over a third of dwellings are either of the lowest or second lowest quality. In addition, dwellings owned by the government or the church tend to be of a higher standard than privately owned dwellings. This might be because privately owned dwellings tend to be self-built using traditional materials, whereas the government and the church contract out projects to construction companies with a different set of resources.

In summary, the divide between rural and urban areas of Timor-Leste and Dili in particular, can be observed throughout all indicators. Low living standards and the lack of employment in municipalities outside of Dili create a strong incentive for internal rural-urban migration, especially for young people. In how far the urban labour markets are able to absorb the in-migration from rural areas is questionable, and also how well cities, Dili in particular, are going to cope with the growing demand for infrastructure. Rural economic development should therefore be the primary aim of any future development plan.

1   INTRODUCTION

The 2015 Timor-Leste Housing and Population Census was held in July 2015. The point in time to which all Census information referred to (the 'Census Moment') was the night between 11 July and 12 July 2015. All 13 municipalities of Timor-Leste were covered in the Census. Based on the Census data, a number of analytical reports have been produced and are accessible to the public via the website of the General Directorate of Statistics of Timor-Leste.[1]

The aim of the 2015 Census was to provide the government and other stakeholders with essential information on the population of Timor-Leste, such as demographic, economic and social characteristics, as well as housing conditions and household amenities. The collected data allows for an evaluation of the impact of social and economic policies and programmes in the country and is directly linked to the implementation of Timor-Leste's Strategic Development Plan (Government of Timor-Leste, 2011).

For example, the Government set out to achieve access to clean water and improved sanitation for all citizens by 2030 and to "provide a safe and secure piped 24-hour water supply to urban households in 12 district centres" (Government of Timor Leste 2011: 80). Similar goals have been formulated for housing, electricity supply and other priority areas.

In addition, there are a number of Sustainable Development Goals (SDGs) that the Census data presented in this report will help monitor. The 2030 Agenda for Sustainable Development sets out 17 Sustainable Development Goals of which the following are directly related to human settlements development:

- SDG 6: Ensure availability and sustainable management of water and sanitation for all

- SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all

- SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

These goals are tracked through specific global indicators. For example, SDG Global Target 6.1 aims to "achieve universal and equitable access to safe and affordable drinking water for all" by 2030 (WHO & UNICEF 2017a: 2). The global indicator to track progress towards that goal is the percentage of the population using safely managed drinking water services. The 2015 Census did collect the relevant data for this indicator, and results will be presented in this report.

The remainder of this chapter will give an overview of the structure of this publication, as well as provide a brief summary of the rationale behind each indicator.

Chapter 2 will present a summary of the concepts and definitions used in this report, as well as describe the limitations of the Census data. Because of the large scale of the Census operation, and because running Censuses in developing countries often comes with a number of challenges, issues that may impact on the data quality will be discussed.

Chapter 3 will focus on general household characteristics. It will be explored how many members a household in Timor-Leste has on average, and how that compares to other countries in the region. Further light will be shed on the age and sex distribution of household heads across the country. Particular attention will be paid to households that are headed by a woman in order to explore the characteristics of these households in more detail. If those

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[1] See http://www.statistics.gov.tl/category/publications/census-publications/.

households are significantly different from households headed by a male, then specific policies might be needed to reach them.

Chapter 4 looks at the building materials used in the construction of dwellings in Timor-Leste. In particular, external walls, floor and roof materials will be evaluated and linked to the previous Census in order to describe changes over time and to explore if, overall, the quality of the available housing stock in the country has improved.

Chapter 5 investigates access to clean drinking water and sanitation. While so far, progress has been monitored with regards to the Millennium Development Goals (MDGs) that were to be achieved by 2015, this report is one of the first national publications monitoring progress towards achievement of the 2030 Sustainable Development Goals. While progress reports on MDGs mainly used a broad monitoring approach, dividing water sources and sanitation into 'improved' and 'unimproved', the implementation of the SDGs calls for a more nuanced monitoring approach, using a 5-scale 'ladder'. For example, drinking water sources are now classified as either 'safely managed', 'basic', 'limited', 'unimproved' or 'surface water'. The chapter will use data from the 2010 and 2015 Census to track progress towards achieving the SDGs using this new monitoring framework.

Chapter 6 is dealing with energy sources used for cooking and lighting. In households that have to rely on unclean cooking fuels such as wood household members are more exposed to micro-particles than households where cooking is done using gas or electricity. Unclean cooking fuels are a major source of respiratory diseases, especially for children, and tracking what fuels households use helps monitor progress towards improving Public Health.

Chapter 7 compares household assets available to household members in urban and rural areas. These assets function as a proxy for the socio-economic status of households and help paint a picture of the living conditions of the majority of the population.

Chapter 8 combines data from the previous chapters to build an aggregate measure of housing adequacy. The idea here is that one indicator alone, the material used for constructing the external walls of a dwelling, say, is not indicative of the overall housing quality. In fact, it is the combination of many factors, materials used for walls, floors, roofs, the access to clean drinking water and sanitation, as well as the fuels used for cooking and lighting, which constitute how adequate a dwelling is for the people who live in it. Housing quality scores are presented by household size, municipalities, tenure, and economic activity of household head.

Chapter 9, finally, sums up the findings of this report and point out areas for improvement in order to achieve the ambitious targets set out in both the Strategic Development Plan, as well as the Sustainable Development Goals.

2 CONCEPTS, DEFINITIONS, LIMITATIONS

The 2015 Population and Housing Census provides benchmark information which is essential for sound development planning, making administrative and policy decisions, and research. The specific objectives of the Census were to ascertain the following:

a. Size, composition and spatial distribution of the population
b. Levels of education attained by the population
c. Size and deployment of the labour force
d. Prevalence of disability and its spread
e. Levels of fertility, mortality and migration
f. Rate and pattern of urbanization
g. Housing conditions and availability of amenities and assets
h. Participation in agricultural production
    (GDS 2015: 1)

It is beyond the scope of this report to cover all areas listed above; housing conditions and availability of assets form the main focus of this publication. That being said, there is significant overlap between the different objectives. For example, although levels of education are part of a separate analytical report (GDS, UNICEF & UNFPA 2017), where relevant for the analysis, data presented in this report will be cross-tabulated by, for example, region or level of education of the household head.

Some key concepts used throughout this report will be defined below; these are also the definitions used in the Interviewer's Instruction Manual (GDS 2015).

Household: A household consists of one or more persons who usually share their living quarters and share their principal meals. Residence in the same quarters and sharing of principal meals are two necessary conditions for persons to be members of the same household. A household, as defined above, might be a family, a group of unrelated people living together, or a single person living alone.

Head of household: The household member who generally undertakes key decisions and who is recognised as such by all household members. If the usual head of household was not present on the Census night, then the next most responsible member assumes that role for the purpose of the Census.

Building: Any independent, freestanding structure comprised of one or more rooms covered by a roof with external walls or dividing walls that extend from the foundations to the roof. A building can be a house, a building with apartments, a store, or an office building. In this report, 'building' and 'dwelling' are used interchangeably and have the same meaning.

Private/conventional household: Consists of a person or a group of persons who live together and have common housekeeping/cooking arrangements. If two or more persons live in the same dwelling unit and have separate eating arrangements, they were treated as separate households.

Non-conventional household: Groups of people living together who cannot be said to form an 'ordinary' household. Examples are hospitals, schools/colleges, prisons, hotels/lodges, etc. These institutional populations were covered separately.

Urban/rural areas: All district capitals were considered as urban areas. The boundaries of the district capitals are the ones provided in the built up areas. Areas which had the following characteristics qualified as urban, which means that they:

a. Have a population of about 2,000 people or more.[2]
b. Have less than 50 per cent of its population employed in agricultural/fishing activities and the remaining people employed in the modern sector.
d. Have electricity and piped water.
e. Have access to schools, medical care and recreational facilities.

While the 2015 Population and Housing Census set out to capture the entire population, there are, of course, limitations. As with all data collection exercises, especially in low-income countries, cost and accuracy have to be balanced, and at the design stage decisions have to be made about the scope of a survey (or Census). For example, even though enumerators collect vital information about the quality of dwellings, the 2015 Census does not constitute an elaborate housing quality survey. Data collection for that kind of study would include more details on the available housing stock, such as inhabitants' satisfaction with their accommodation, their perception of their neighbourhood and general community safety, repairs, insulation, etc, and often the overall condition of a dwelling is assessed by a trained professional. In the 2015 Census, the assessment of the overall condition of a house was made by the respondents themselves. The answer categories were 'good', 'mediocre', 'a little damaged' and 'severely damaged'. As this assessment can be highly subjective, efforts have been made to minimise the scope for error. Firstly, when calculating the aggregate housing adequacy score the assessment of the quality of the dwelling unit was only one out of eight categories feeding into the overall score, and secondly, enumerators were trained in assisting respondents with their answer, pointing out that, for example, dwellings decayed or ruined and far from being in conditions that can be repaired may be considered 'severely damaged'.

Changing questions and answer categories can pose another limitation in terms of consistency and comparability. For example, while the 2010 Census covered broadly the same toilet facilities as the 2015 Census (although the category of 'public latrine' was added in the latest Census), the 2010 Census asked respondents if their main toilet facility was shared with another household. The 2015 Census did not include a question on toilet sharing, but instead collected more detailed information on final waste disposal. While changes in the Census questionnaire might limit its comparability to previous data collection exercises, in case of the last two Censuses in Timor-Leste, every effort has been made to recode data and map them to a common assessment framework that allows for comparability (see the UNICEF/WHO water and sanitation 'ladders' in Chapter 5).

In summary, while the Timor-Leste Population and Housing Census has evolved over time, every effort has been made to ensure that the data collected is comparable over time in order to track progress and evaluate policies.

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[2] 2000 persons as the cut-off for rural areas also corresponds with the recommendations for the 2020 Census made by the United Nations Economic Commission for Europe (UNECE 2015: 85).

3   HOUSEHOLD CHARACTERISTICS

The 2015 Census collected a wealth of information on the characteristics and composition of private household in Timor-Leste, both nationally and at sub-national level. The data allows for links to be made between different policy areas. The specific aims of the data collection exercise were to

- Provide policy makers with relevant and reliable information on housing demand and quality of housing stock
- Align with other surveys (for example, the Demographic and Health Survey)
- Allow for comparison of data over time
- Permit disaggregation of information both geographically and in terms of population sub-groups (such as households with a female head of household)
- Support cross-analysis on a range of issues through the dissemination of a number of key social variables.

This chapter will present some of the main household characteristics of the 2015 Census, establish trends over time and cross-reference with other key surveys.

3.1   HOUSEHOLD SIZE

This section explores the current size of households in Timor-Leste. Comparing Census data at national level over time shows that

a) There is no real change in the average household size at national level (compared to the 2010 Census) and
b) Households in urban area are bigger than in rural areas (6.4 compared to 5.5 people in the 2015 Census).

This trend is supported by the latest Demographic and Health Survey (DHS) data. Comparing data at municipality level shows that urban areas generally have a higher average household size than any of the other municipalities.

TABLE 3.1: MEAN HOUSEHOLD SIZES (CENSUS 2004-2015, DHS 2016)

	Census 2015	Census 2010	Census 2004	DHS 2016
Timor-Leste	5.8	5.7	4.3	5.3
Urban	6.4	6.4	4.9	6
Rural	5.5	5.4	4.1	5

Compared to other countries in Southeast Asia, Timor-Leste has one of the largest household sizes. The average household size in Indonesia, for example, is 4.0, in Papua New Guinea it is 5.3 and 4.8 in Vanuatu.[3] It can be argued that the average household size in a country is driven mainly by fertility rates, but it may also be attributed to other factors such as socio-cultural reasons, as well as political and economic motivations.

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[3] United Nations, Department of Economic and Social Affairs, Population Division (2017). Household Size and Composition 2017. (https://population.un.org/Household, accessed 12.06.2018)

Single-person households are an exception in Timor-Leste; most households are shared between 3 to 7 people. In addition, around 16% of households captured by the last two Censuses are large households with 9 or more members.

The latest DHS does not record as many large households, although the overall distribution is very similar to the 2015 Census data. Despite this difference in the proportion of large households, the point still holds that household sizes in Timor-Leste are larger than in most of the neighbouring countries, which raises questions around housing conditions and the general adequacy of available housing stock.[4]

FIGURE 3.1: HOUSEHOLDS BY SIZE (CENSUS 2010, 2015, DHS 2016)
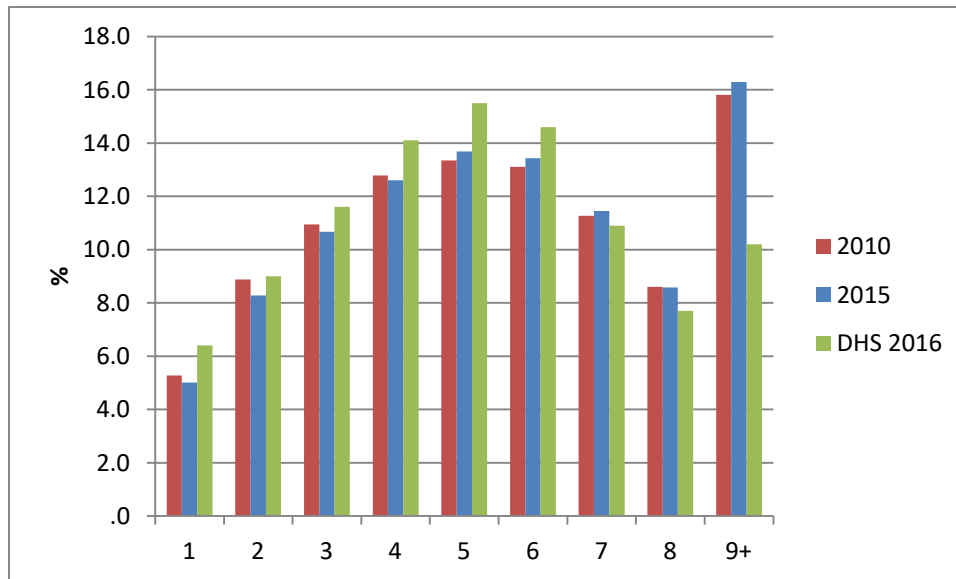
3.2 HOUSEHOLD HEADS BY AGE AND SEX

Household heads play an important role in the socio-economic positioning of a household. The definition used in the 2015 Census is the person who makes most of the household decisions and who is acknowledged as household head by all members.

Figure 3.2 (below) shows that, on average, household heads in Timor-Leste's urban areas are younger than in rural areas. In urban areas, 59% of household heads are between 15 and 44 years old, while this is only true for 38% of household heads in rural areas. Similarly, whereas only 4% of household heads in urban areas are age 70 or above, in rural areas this proportion rises to 13%. Given the evolving rural-urban migration (GDS, forthcoming), this could be interpreted as another indicator of an ageing rural population, although more data is needed to support this.

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[4] Further research should combine Census and DHS data to investigate housing conditions further and, for example, explore overcrowding.

FIGURE 3.2: HOUSEHOLDS BY AGE OF HEAD (CENSUS 2015)
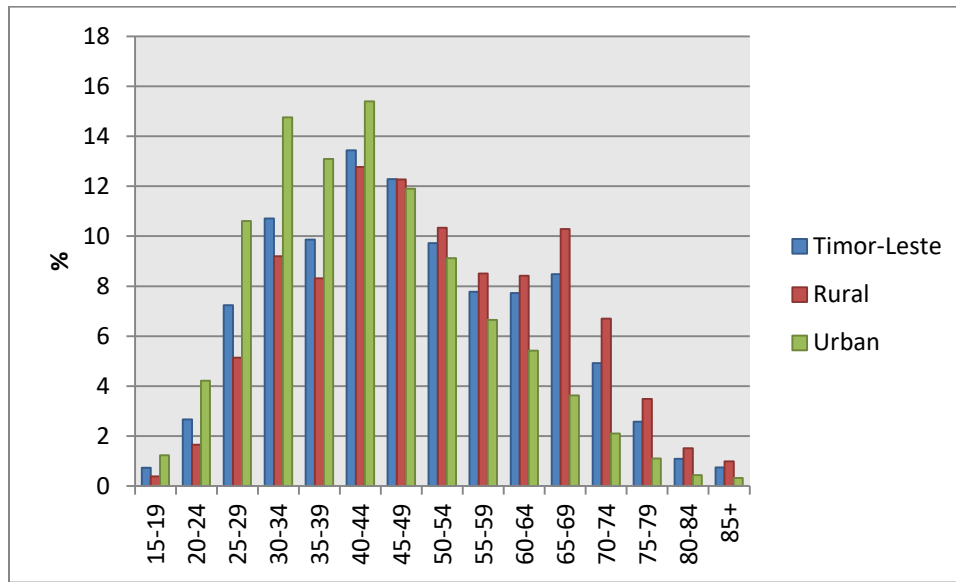
Comparing the 2010 and 2015 Census, the majority age group of household heads has shifted from 35-39 to 40-44. Table 3.2 provides a further breakdown of the age of household heads by municipality, while Table 3.3 presents the average age of household heads by municipality and sex.

TABLE 3.2: PERCENTAGE HOUSEHOLDS BY MUNICIPALITY AND AGE OF HEAD (CENSUS 2015)

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+
Aileu	0.4	1.6	5.3	9.3	6.6	12.0	14.4	11.6	10.4	8.6	9.8	5.5	2.7	1.8
Ainaro	1.4	2.0	5.3	9.8	9.9	14.4	13.1	7.7	6.0	7.1	13.4	5.7	2.7	1.6
Baucau	0.5	2.0	5.3	7.5	7.3	12.3	12.1	11.3	9.4	9.6	9.3	6.4	3.9	3.2
Bobonaro	0.6	1.8	5.7	10.1	9.2	12.1	11.9	11.4	8.3	7.8	9.8	6.0	3.2	2.2
Covalima	1.1	3.1	7.2	10.8	8.6	13.0	12.6	9.3	6.8	6.7	10.5	5.9	2.6	1.9
Dili	0.7	4.5	11.4	15.7	13.2	15.1	11.6	9.1	6.6	5.1	3.3	2.0	1.0	0.7
Ermera	0.9	2.4	6.9	9.7	9.3	13.7	14.5	10.4	8.6	8.3	7.4	4.1	2.4	1.6
Lautem	0.8	1.6	4.1	7.0	9.8	14.2	13.8	11.0	8.4	8.1	8.3	6.0	3.9	3.0
Liquiça	0.8	2.5	7.5	10.8	7.1	11.6	12.0	9.5	9.5	9.6	10.0	5.2	2.3	1.7
Manatuto	0.5	1.6	5.8	8.8	8.4	13.2	12.1	11.0	9.4	9.5	9.0	6.1	2.7	1.8
Manufahi	0.4	2.0	6.6	10.5	8.4	13.8	11.7	8.5	8.2	9.7	9.8	5.8	2.8	1.7
Oecussi	0.8	2.4	7.5	11.1	11.9	12.0	11.0	8.4	5.7	8.7	12.0	4.9	2.4	1.3
Viqueque	0.7	2.8	6.3	8.8	10.6	14.3	10.8	7.7	6.9	7.4	10.6	7.0	3.5	2.8

TABLE 3.3: MEAN AGE OF HOUSEHOLD HEAD BY SEX (CENSUS 2015)

	All	Male	Female
Timor-Leste	48.1	47.1	53.2
National - Urban	42.9	42.3	45.9
National - Rural	49.9	48.9	55.7
Aileu	50.3	49.6	55.0
Ainaro	49.2	48.4	53.5
Baucau	51.4	50.2	57.2
Bobonaro	49.9	48.9	55.3
Covalima	48.5	47.5	53.9
Dili	42.4	41.9	45.6
Ermera	47.9	47.0	52.4
Lautem	50.7	49.3	55.1
Liquiça	49.1	48.2	54.4
Manatuto	50.1	49.4	54.3
Manufahi	49.4	48.7	55.3
Oecussi	48.2	46.8	56.7
Viqueque	49.7	48.5	55.0

Both tables demonstrate how, on average, household heads in Dili are younger than elsewhere in the country, and how heads of households in the other municipalities tend to be older: the average age of household heads in all other municipalities (except Dili) combined is 50, while the mean age of household heads in Dili is 42.

In addition, the mean age of female heads of households is generally higher than the mean age of their male counterparts, by an average of 6 years. The characteristics of female headed households will be explored further in the following section.

FIGURE 3.3: HOUSEHOLDS BY AGE OF HEAD AT NATIONAL LEVEL (CENSUS 2010, 2015)
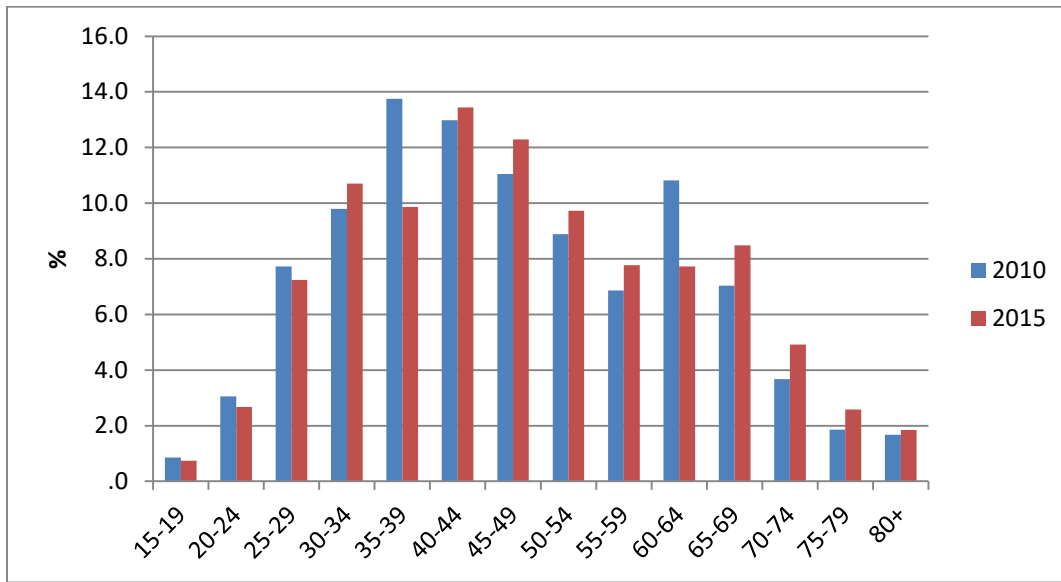
3.3 FEMALE HEADED HOUSEHOLDS

The following section will explore the characteristics of female-headed households (FHHs). FHHs are of particular interest to policy makers; should their characteristics be significantly different from households with a male head, then special policy interventions might be needed to reach FHHs. [5]

While it is out of scope of this publication to compare male and female-headed households in Timor-Leste in detail, this section offers a first descriptive overview of the characteristics of FHHs, in particular with regard to education, marital status, economic activity, and household size. As deprivation proxies, these variables offer initial insights into the situation of female-headed households in Timor-Leste. Nonetheless, further work is needed to investigate poverty propensities in more detail, and to develop substantial policy recommendations.

Similar to the 2010 Census, around 16% of households in Timor-Leste are female-headed (Figure 3.4), which equates to around 32,000 households at a national level. Overall, the distribution of female headed households across rural and urban areas is relatively consistent: of all urban households, 15% are headed by a female, and of all rural households, 16% have a female head.

In most municipalities, the percentage of FHHs is close to the national average of 16%; however, Lautem is an exception where a quarter of all households are headed by a woman. As the negative net migration rate for Lautem is among the highest in the country (and has been over the last decade), one of the reasons for the high number of FHHs is likely to be the predominant out-migration of males (GDS, forthcoming).

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[5] Whether FHHs are more likely to be income poor than male-headed households is the subject of on-going research. A study based on the 2014 Timor-Leste Survey of Living Standards (World Bank 2016) found that FHHs are, in fact, less likely to be poor than male-headed households, and that they also enjoy a faster rate of poverty reduction.

FIGURE 3.4: FEMALE-HEADED HOUSEHOLDS BY MUNICIPALITY (CENSUS 2010, 2015)
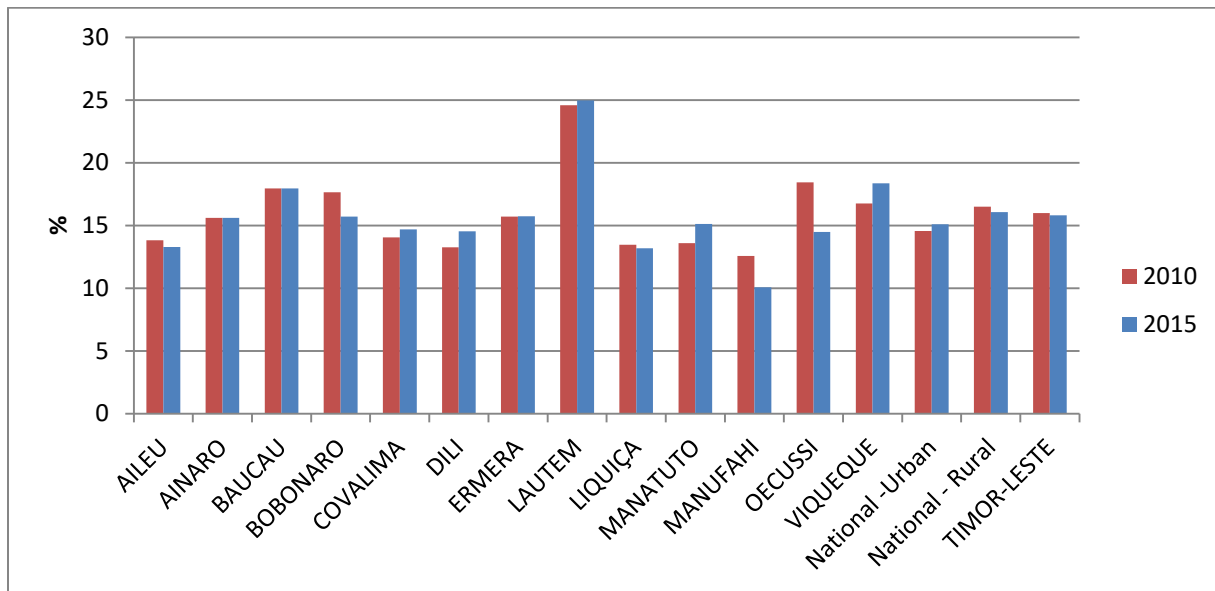
3.3.1 LEVEL OF EDUCATION

Educational levels of household heads are often used as a predictor of a household's socio-economic situation, as often, those less educated are more likely to be income-poor, and expanding access to education can help reduce income inequality (Coady & Dizioli 2017). Therefore, significantly different educational levels of male and female household heads can potentially point towards different poverty and deprivation propensities.

Using levels of completed formal education as a measure, that is, any form of pre-primary education and above, the Census data shows a significant educational difference between male and female household heads in Timor-Leste (Figure 3.5). In all municipalities, male household heads are more likely to have had some form of formal education than female heads of household. While the general level of education for both male and female heads is highest in Dili, the proportions drop drastically in the more rural areas. With below 20%, Ermera and Oecussi report the lowest percentage of female household heads with formal education.

FIGURE 3.5: HOUSEHOLD HEADS WITH FORMAL EDUCATION BY SEX AND MUNICIPALITY (CENSUS 2015)
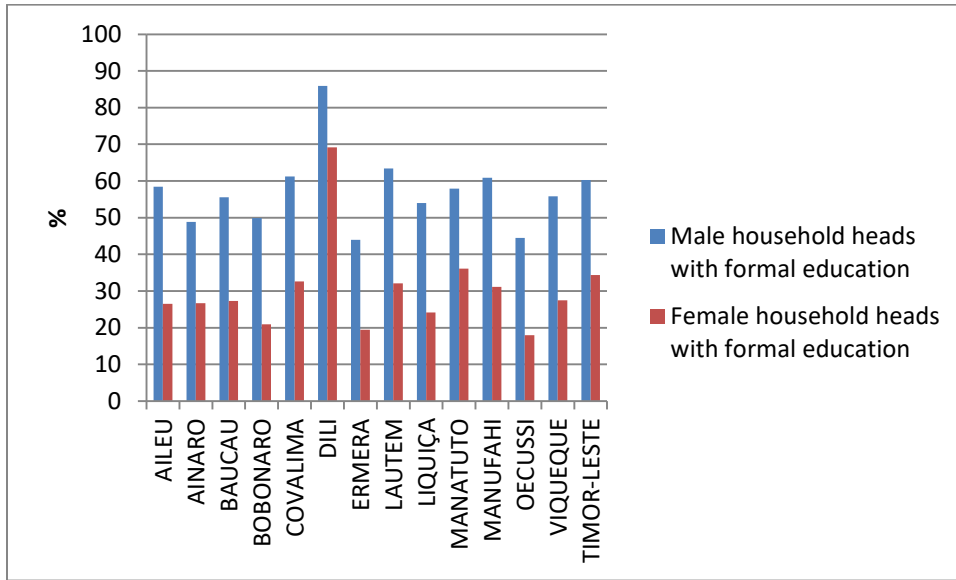
It is worth emphasising here that in the municipalities outside of Dili, not only is the level of formally educated female household heads much lower than those of male heads of household, but it is also the percentage of female household heads without any form of formal education that is standing out. In Ermera, less than 20% of female heads of households attained some degree of formal education, and this also means that around 80% have never completed any formal education at all. In no other municipality is the proportion of females age 6 and above who never went to school as high as in Ermera (GDS, UNICEF & UNFPA 2017: 61).

While this section explored the level of education of household heads with regard to sex, the following section will investigate the marital status of household heads.

3.3.2 MARITAL STATUS

Comparing the marital status of male and female heads of household reveals very different circumstances. While 92% of all male household heads are married, this is only true for 44% of female household heads. The most striking difference is the proportion of widowed female household heads: 41% of households are headed by a widow, while only 3% of male household heads are widowers.

FIGURE 3.6: HOUSEHOLDS BY SEX OF HEAD AND MARITAL STATUS (CENSUS 2015)
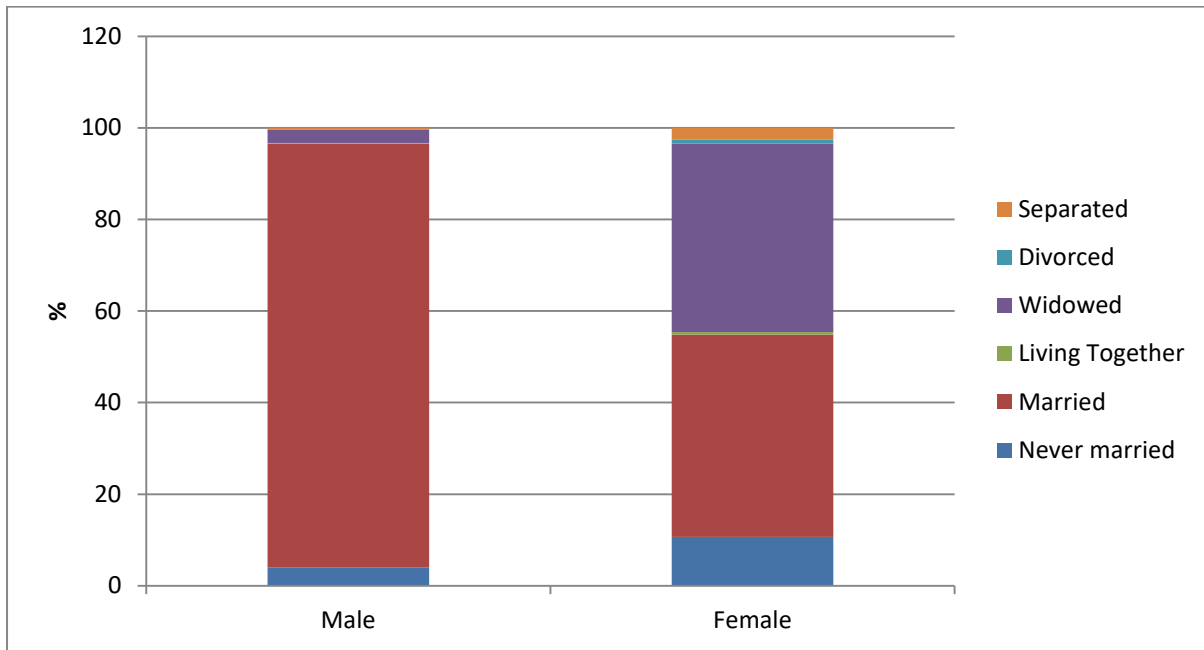
This phenomenon can, in part, be explained by Timor-Leste's history. Under Indonesian occupation, nearly a quarter of the population died or fled the country, the majority of them men.[6] In addition, misreporting may have contributed to the high number of widowed household heads; there is anecdotal evidence suggesting that sometimes, female household heads report as 'widowed' when the husband moved to either another municipality or abroad for economic reasons. Either way, it is fair to assume that widowed household heads cannot rely on the support of a cohabiting partner, be it financially or otherwise.

In a similar context, the following section will explore the economic activity of heads of households.

3.3.3   ECONOMIC ACTIVITY OF HOUSEHOLD HEAD

Most household heads, male and female, are own-account workers, that is, they hold self-employment jobs and do not employ anyone else on a regular basis. 52% of male household heads and 45% of female household heads are working on their own-account (Figure 3.7).

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[6] Benetech Human Rights Data Analysis Group (2006). The Profile of Human Rights Violations in Timor-Leste, 1974–1999. A Report to the Commission on Reception, Truth and Reconciliation of Timor-Leste. Human Rights Data Analysis Group (HRDAG).

FIGURE 3.7: HOUSEHOLDS BY SEX OF HEADS AND ECONOMIC ACTIVITY (CENSUS 2015)
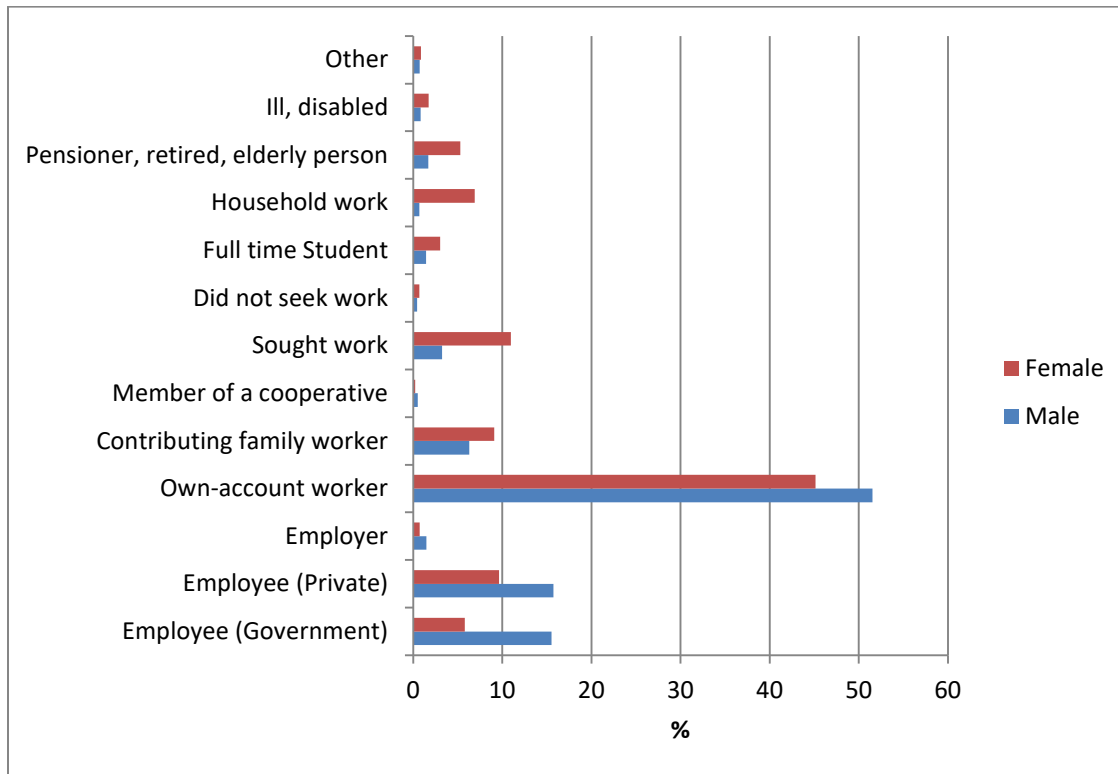
For male household heads, employment in the private or public sector is another common economic activity, with 31% working as employees (versus 15% for female household heads). Table 3.4 and Table 3.5 list the Top-3 economic activities for male and female household heads, respectively.

TABLE 3.4: TOP-3 ECONOMIC ACTIVITIES FOR MALE HOUSEHOLD HEADS (CENSUS 2015)

Economic activity	% male	% cumulative
Own-account worker	51.5	51.5
Employee (gov. & private)	31.2	82.7
Contributing family worker	6.3	89

TABLE 3.5: TOP-3 ECONOMIC ACTIVITIES FOR FEMALE HOUSEHOLD HEADS (CENSUS 2015)

Economic activity	% female	% cumulative
Own-account worker	45.2	45.2
Employee (gov. & private)	15.4	60.6
Sought work	10.9	71.5

While the percentage of employees among male household heads is double that of female heads, another difference between the two groups is the proportion of those seeking work. Nearly 11% of female household heads were looking for work in the reference period (that is, the week prior to interview); this is only true for 3% of male heads of household. This seems to indicate that female heads of households are less likely to be working as

employees and more likely to be looking for work or working as a contributing family worker, both economic categories that are associated with no or a very low income.
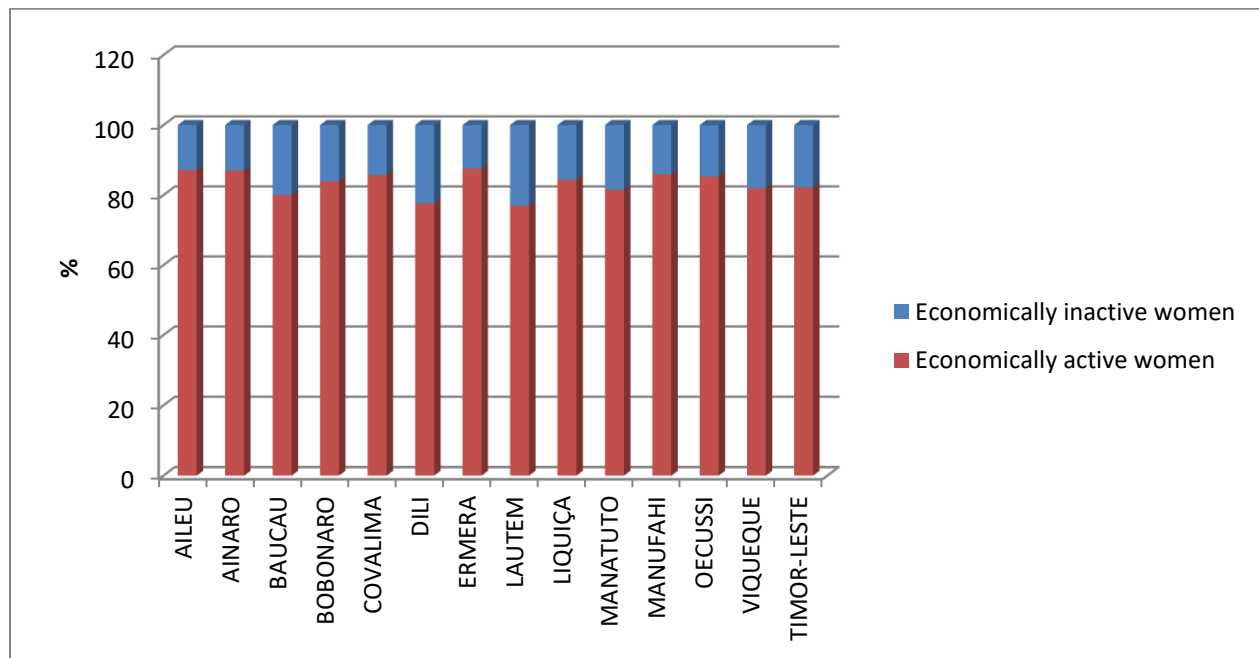
The economic activity rate of women in each district closely mirrors trends at the national level. In general, the labour force participation rate for men is higher than for women: 66% compared to 42%.

In the 2015 Census, three municipalities had labour force participation rates below the national average: Dili (45.3 percent), Lautem (52.3 percent) and Baucau (54.6 percent), and these are also the districts with the highest rate of economically inactive women. The labour force participation rates of all other nine municipalities were above the average national rate (56.1 percent), with Oecussi having the highest rate (68.0 percent). Dili had the highest unemployment rate (10.6 percent) followed by Lautem and Liquiça (each at 5.6 percent). By contrast, Oecussi had the lowest unemployment rate (1.9 per cent).

Having investigated the main economic activity rates, the following section will explore household sizes of male and female headed households.

3.3.4   HOUSEHOLD SIZE

Female headed households in Timor-Leste tend to be smaller than those with a male household head. A third of FHHs are either single-person or 2-person households, whereas this is only the case for 1 out of 10 male headed households (Figure 3.9).

FIGURE 3.9: SIZE OF HOUSEHOLDS BY SEX OF HEAD (CENSUS 2015)
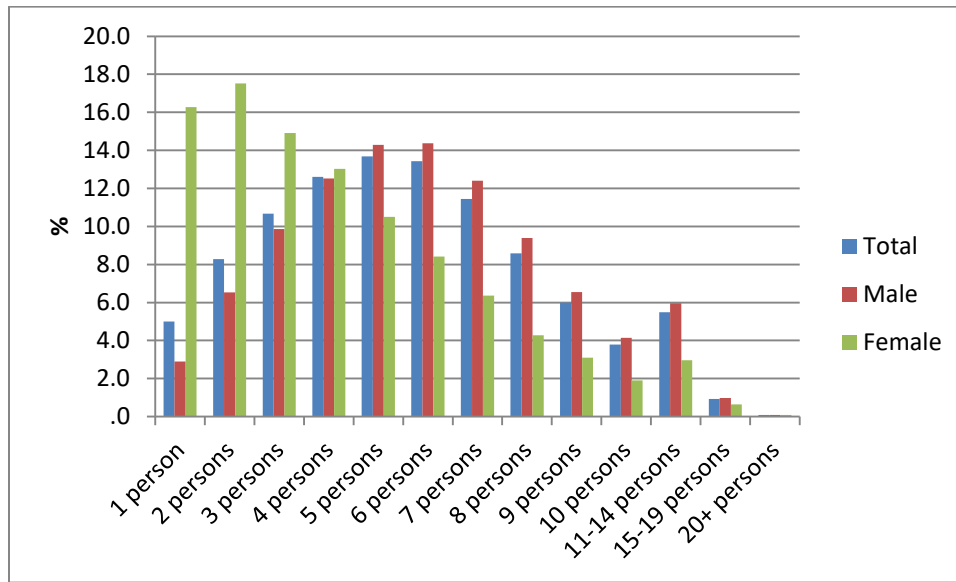
Large households, that is, those with 9 or more people, make up 18% of the male headed households, while this is true for only 9% of female-headed households. One could speculate that, given the differences in education and economic activity (discussed in sections 3.3.1 and 3.3.3), male household heads may be more capable of supporting a larger number of people, however, without information on household income and economic activity of the other household members, this assumption might not hold. Further work is needed to learn about the poverty propensities of households with a female head as opposed to a male head of household.

3.4 SUMMARY

This chapter offered an initial descriptive overview of the characteristics of private households in Timor-Leste, both at national and sub-national level. Particular attention was paid to the approximately 32,000 Female Headed Households (FHH) in Timor-Leste as poverty and consumption characteristics for these households might be different than for households with a male head.

The average household size in Timor-Leste is 5.8 which is higher than in most neighbouring countries (section 3.1). Households in urban areas tend to be bigger than in rural areas, and generally, there has not been any change in the average household size since the 2010 Census.

In terms of the age and sex of heads of household, household heads in Dili are younger than in the other municipalities (section 3.2). The average age of heads of household in Dili is 42, whereas in the municipalities it is 50. In addition, household heads age 70+ are more likely to be living in the municipalities than in urban areas. More research is needed on the overall age structure of urban versus rural areas.

16% of households in Timor-Leste are headed by a woman. Proportions are more or less evenly distributed across the country, with Lautem being an exception where a quarter of households have a female head.

Levels of education for male and female household heads tend to be very different (section 3.3.1). In all municipalities including Dili, male heads of households are more likely to have had completed some form of formal education than female household heads. In the more rural areas, these educational differences tend to be more

pronounced. In Ermera, for example, 80% of female household heads did not report completion of any level of formal education at all.

As for marital status, while nearly all male household heads are married, almost half of all female heads of household are widowed (section 3.3.2). This means they cannot rely on the support of a cohabiting partner.

The majority of household heads, male and female, are working as own-account workers, however, a third of male heads of household are employed in the public or private sector (section 3.3.3). Female heads of household, on the other hand, are less likely to work as employees, and more likely to be either looking for work or to be working as a contributing family worker. The lack of income from work may exacerbate the living conditions especially of the poorest households.

Households headed by a male tend to be bigger than those with a female household head (section 3.3.4). Single person or 2-person households make up close to a third of all female headed households, while this is only true for around 10% of households headed by a male.

4 BUILDING MATERIALS

This chapter and the following are dealing, in essence, with the adequacy of housing available in Timor-Leste. One of the targets of Sustainable Development Goal (SDG) 11 is to "ensure access for all to adequate, safe and affordable housing" by 2030.[7] The Office of the United Nations High Commissioner for Human Rights (OHCHR) lists a number of conditions that must be met to constitute 'adequate housing', such as:

- Security of tenure: legal protection against forced evictions, harassment and other threats
- Availability of services, materials, facilities and infrastructure: access to safe drinking water, sanitation, energy for cooking, heating, lighting, etc.
- Affordability: the ability of occupants to pay the cost of housing without compromising their enjoyment of other human rights
- Habitability: physical safety and adequate space for occupants; protection against cold, damp, heat, rain, wind, etc.
- Accessibility: housing that takes into account the needs of disadvantaged groups
- Location: the distance between accommodation and employment opportunities, health-care facilities, schools, etc.
- Cultural adequacy: housing that takes expressions of cultural identity into account
  (OHCHR 2009: 3-4)

It is out of scope of this report to cover all of the criteria of adequate housing; however, the 2015 Census did collect data on a number of aspects regarding the quality of housing which shall be discussed in the remaining chapters of this report.

4.1 EXTERNAL WALL MATERIALS

The materials used to construct the external walls of an accommodation are, to a large extent, determining how well inhabitants are protected from the extremes of climatic conditions such as rain, heat, cold or humidity. In the following, wall materials are classified as either 'modern' or 'traditional'. Concrete and bricks are defined as modern wall building materials, whereas bamboo, wood, corrugated iron, clay and palm trunks are classified as traditional. This is not to say that traditional building materials are inferior to bricks and concrete per se, however, at the national level they can give an indication of the durability of the available housing stock, as well as housing conditions.

The 2015 Census shows that the majority of dwellings in Timor-Leste use traditional wall building materials: 62% as opposed to 38% of bricks and concrete dwellings. Comparing data from the 2010 and the 2015 Census, there seems to be a slight decrease in the number of enumerated buildings that had bamboo as the primary wall material, and a slight increase in the use of bricks and concrete (Figure 4.1), however, more data is needed to determine a definite trend from traditional to more modern wall materials.

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[7] http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-11-sustainable-cities-and-communities/targets/

FIGURE 4.1: EXTERNAL WALL MATERIALS (CENSUS 2010, 2015)
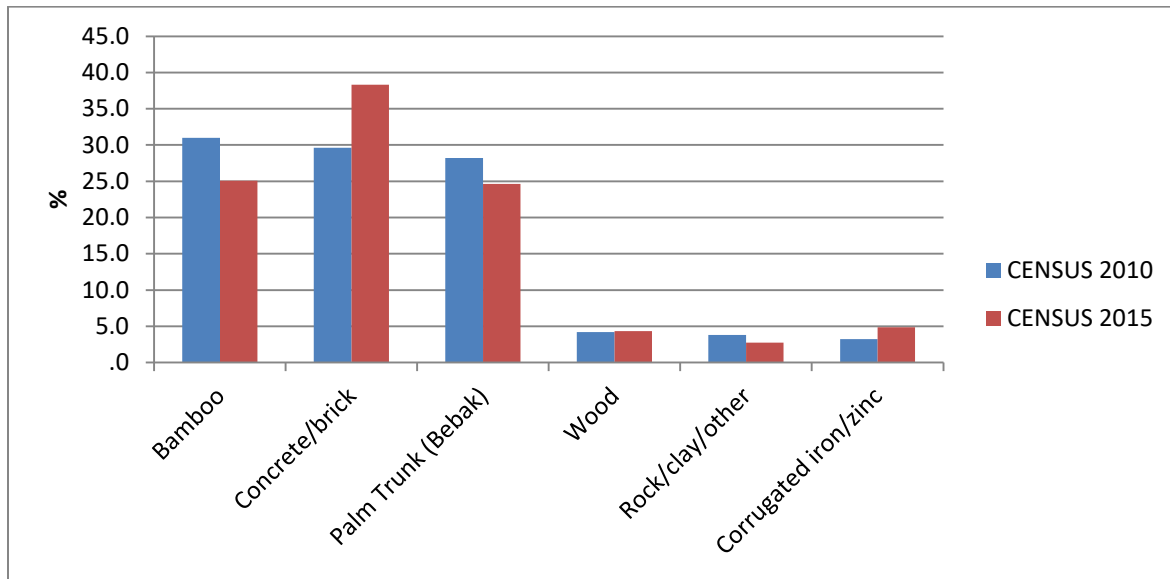
A comparison of urban and rural areas shows that the majority of dwellings in rural areas are constructed using traditional materials, while most dwellings in urban areas are made of bricks/concrete (Figure 4.2). It is worth mentioning that the Timor-Leste Living Standards Survey 2001 recorded just over 2 per cent of dwellings in the country as constructed using modern wall materials (GDS & UNFPA 2012: 28).

FIGURE 4.2: EXTERNAL WALL MATERIALS, RURAL/URBAN (CENSUS 2010, 2015)
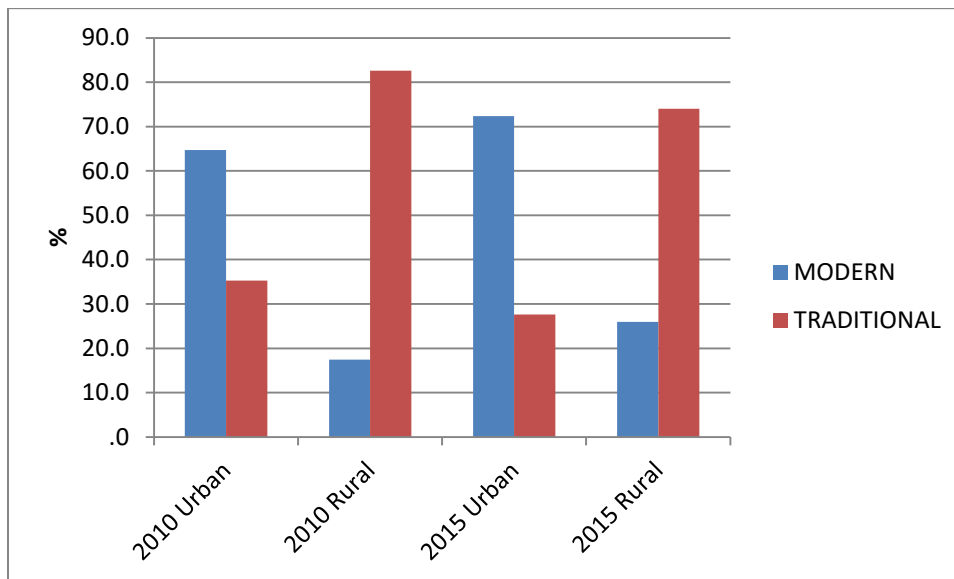
4.2 FLOOR MATERIALS

Floor materials, too, can be an indicator of housing durability and overall housing quality. Here, concrete and tiles are classed as durable floor materials, and wood, soil and bamboo are considered non-durable. Similar to wall

materials, there is a large difference between urban and rural buildings in Timor-Leste. In urban areas, almost 90% of dwellings have floors made of concrete and/or tiles, while in rural areas, the majority of floors, 65%, are made of non-durable materials (Table 4.1).

TABLE 4.1: FLOOR MATERIALS, NATIONAL LEVEL (CENSUS 2015)

	2015 URBAN	2015 RURAL	TOTAL
Durable	86.2	34.7	48.4
Non-durable	13.8	65.3	51.6

In general, however, there is a trend towards using more durable and less non-durable floor materials (Figure 4.3). While the 2004 Census recorded only around 30% of dwellings with durable floor materials, by 2015 nearly every other house had a floor made of concrete and tiles, while the percentage of dwellings with non-durable floors decreased from 70% in 2004 to just over 50% in 2015.

FIGURE 4.3: FLOOR MATERIALS, NATIONAL LEVEL, TREND (CENSUS 2004, 2010, 2015)
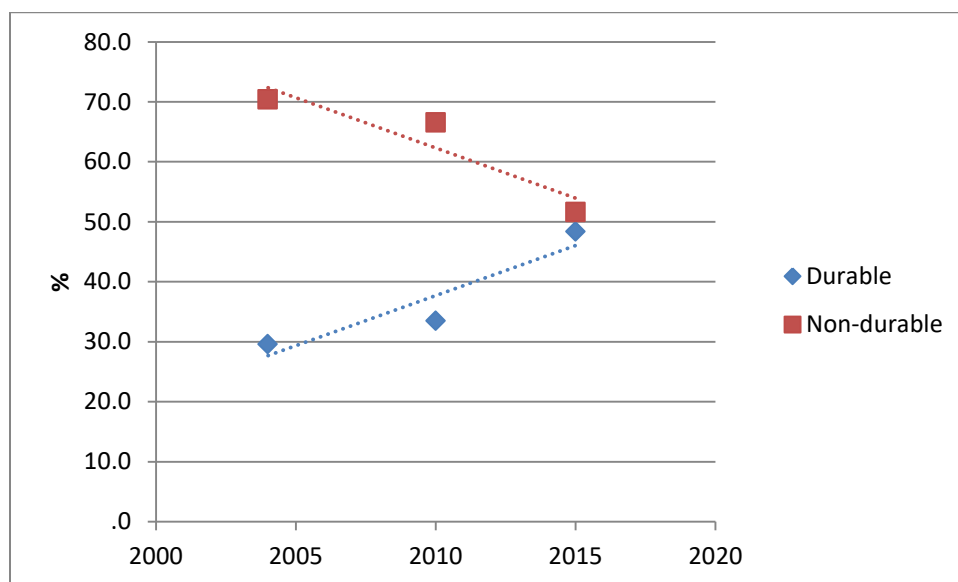
4.3   ROOF MATERIALS

Similar to wall and floor materials, the materials used for roof construction can be an indicator of the overall quality of a dwelling. In this context, palm leaves, thatch, and grass are classified as traditional materials, while concrete, corrugated iron, tiles and asbestos are labelled 'modern'. Comparing Census data over time reveals an almost identical trend to floor and wall materials, that is, a rise in the use of modern roof materials and a fall in the use of traditional materials for roof construction. While in 2010 only 68% of dwellings in Timor-Leste were built with a roof made of modern materials, by 2015 this proportion had increased to 81% (Table 4.2). There is a

moderate difference between urban and rural areas: while in urban areas 9 out of 10 dwellings have a modern roof, in rural areas one out of four dwellings is constructed with a roof made of palm leaves, thatch or grass, materials that can be problematic, especially during the rainy season.

TABLE 4.2: ROOF MATERIALS, NATIONAL LEVEL (CENSUS 2015)

	2015 Urban	2015 Rural	2015 Total
Modern	96.5	75.6	81.1
Traditional	3.5	24.4	18.9

4.4 SUMMARY

This chapter explored the quality of dwellings in Timor-Leste, using materials used for the construction of external walls, floors, and roofs as proxies. In general, there is a marked trend towards the use of more modern, more durable materials, which indicates a rise in the overall quality of housing.

For the construction of external walls, concrete and bricks are now the preferred choice, while the use of bamboo is decreasing. Similarly, durable floor materials are on the rise, while there is a marked fall in the use of non-durable flooring materials. A similar trend can be observed for roof materials.

While this is positive news, indicating a trend towards higher-quality and more durable building materials, the urban-rural divide is still significant, and the overall increase in the use of durable, modern building materials is mainly driven by Dili. In the other municipalities, more than 70% of dwellings are using bamboo, wood, mud, or similar traditional materials for the construction of external walls, and 1 out of 4 dwellings in rural areas has a 'traditional' roof made of palm leaves, thatch or grass.

Of course, the use of traditional building materials itself does not necessarily indicate an inferior housing standard. Nonetheless, in a country like Timor-Leste with its tropical climate and prolonged rainy season, an upgrade of housing stock in rural areas would no doubt make a difference to the overall living conditions of the majority of the population.

5 Housing amenities – water and sanitation

Sustainable Development Goal (SDG) 6 aims to ensure access to safe water and sanitation for everyone[8], and the Government of Timor-Leste is committed to achieving this goal. In the proposed Government Program, approved by the Council of Ministers in July 2018, there is a clear recognition of the urgently needed investment in the sector.

> The absence of these infrastructures seriously affects the public health and quality of life of populations, promoting the spread of diseases, mortality and poor development of children. […] In this context, the Government recognizes that there has been no substantial investment in this sector to date, and views investment in basic sanitation as a priority, also as a sustainable way of combating poverty.[9] (Government of Timor Leste 2018: 51)

More importantly, a clear commitment is made to achieving SDG 6. The Government declares that in order to mitigate the lack of investment in the past, it is planning to:

> Approve and implement the 2018-2030 Investment Plan, Policies and Institutional Reform, *in order to comply with the goals defined in the Strategic Development Plan and the 6th Sustainable Development Goal* (SDG).[10] (ibid.: 53, emphasis added)

The data presented in this chapter will show how Timor-Leste has made significant progress over the last couple of years, but that more effort is needed to achieve universal access to safely managed water sources for all by 2030.

5.1 Main source of drinking water

At the time of independence in 2002, and following the widespread destruction in the aftermath of the 30 August 1999 referendum, around 90 per cent of Timor-Leste's infrastructure, such as health facilities, water supply, and irrigation systems were destroyed (Albrecht et al. 2018: 1). Since then, the country has managed to achieve the Millennium Development Goal on urban water supply and sanitation, with 91 per cent of people in urban areas having access to an improved water source (Figure 5.1). At the national level, 75% of households have access to an improved drinking water source, and the use of unimproved water sources in rural areas has dropped by 10% from 2010, down to 32% in 2015.

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[8] https://sustainabledevelopment.un.org/sdg6

[9] "A ausência destas infraestruturas afeta gravemente a saúde pública e a qualidade de vida das populações, potenciando a propagação de doenças, a mortalidade e o deficiente desenvolvimento das crianças. […] Neste âmbito, o Governo reconhece que não tem havido um investimento substancial neste setor até à data, e encara o investimento em saneamento básico como uma prioridade, também enquanto forma sustentável de combate à pobreza."

[10] "Aprovar e implementar o Plano de Investimento, Políticas e Reforma Institucional 2018-2030, a fim de dar cumprimento às metas definidas no Plano Estratégico de Desenvolvimento e do 6º Objetivo de Desenvolvimento Sustentável (ODS)."

FIGURE 5.1: MAIN SOURCE OF DRINKING WATER, URBAN/RURAL (CENSUS 2010, 2015)
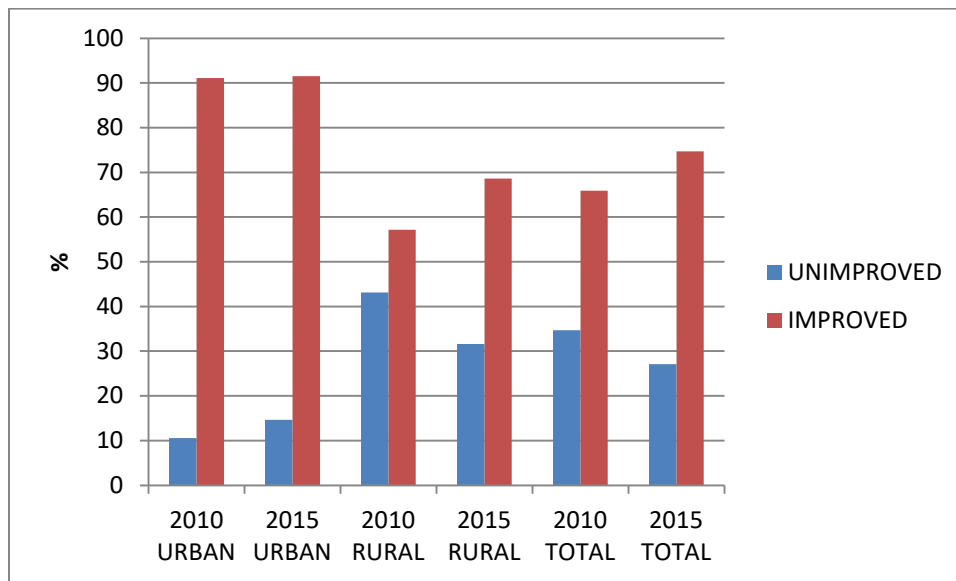
In the analysis of the 2010 Census, bottled water was considered an unimproved water source. The reasoning behind this was that drinking water could be regarded as unimproved not only if it was unsafe, but also if it was unnecessarily costly which was considered to be the case for packaged water.

In accordance with the classification used in the Demographic and Health Survey 2016 (GDS, MoH & ICF 2018: 7) and in line with guidelines published by the WHO and UNICEF (United Nations Statistics Division 2018), for the analysis of the 2015 Census data packaged water was considered a safely managed water source. To allow for comparison over time, 2010 Census data has been recoded, and bottled water was re-classified as a safe source of drinking water.[11]

The remainder of this chapter will use the updated classification produced by the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (WHO & UNICEF 2017a, b). The 'ladders' enable better benchmarking and comparison of progress against the relevant Sustainable Development Goals than the binary 'improved/unimproved' classification.

The following table (Table 5.1) shows how the answer categories used in the 2010 and 2015 Census were mapped to the stages of the 'ladder' developed by WHO/UNICEF. The global indicator for SDG 6.1 (safe and affordable drinking water for all) is measured as the percentage of the population using safely managed drinking water services, i.e. category 1 ('safely managed').

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[11] As for the cost argument, at the time of writing a 19-litre 'gallon' of water, the most common unit of packaged water in Timor-Leste, cost US$1. That being said, this form of packaged water is not available in most of the municipalities, mainly due to transport costs and lack of infrastructure.

TABLE 5.1: MAPPING OF CENSUS CATEGORIES TO UPDATED WHO/UNICEF WATER SERVICE LEVELS

Score	Service level	WHO/UNICEF Joint Monitoring Programme	
		Definition	Census 2010 & 2015 categories
1	Safely managed	Drinking water from an improved water source which is located on premises, available when needed and free from faecal and priority chemical contamination	01. Piped or Pump indoors 07. Bottled water
2	Basic	Drinking water from an improved source, provided collection time is not more than 30 minutes for a roundtrip, including queuing	02. Piped or Pump outdoors 03. Public Piped/Tap
3	Limited	Drinking water from an improved source for which collection time exceeds 30 minutes for a roundtrip, including queuing	06. Rainwater collection 04. Tube well/borehole 05. Protected well or protected spring 09. Water vendors/tank
4	Unimproved	Drinking water from an unprotected dug well or unprotected spring	08. Not protected well or spring
5	Surface water	Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation channel	10. River, lake, stream, irrigation channel

For a water source to be considered 'safely managed', the source must meet three conditions:

- It should be located on premises.
- Water should be available when needed.
- Water should be free from faecal and chemical contamination.

In line with international practice, if any of these conditions is not met or cannot be determined, then the source will be categorised as 'basic' or less than basic (WHO & UNICEF 2017b: 13).

Using these updated categories, the data shows that at the national level, progress has been made at the basic service level, that is, households with access to an outdoors tap/pump or a public tap, from around 40% in 2010 to more than half of all households in 2015 (Figure 5.2)[12]. However, progress at the safely managed service level has been limited. Less than 1 in 10 households (6.8%) in Timor-Leste had access to a safely managed water source in 2015 (Figure 5.2). Also, at a national level, public water points from which community members can collect water

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[12] NB that for water sources as well as sanitation questions, the 2010 and 2015 Census had an 'other' category that could not be properly mapped to the sanitation ladder, therefore the totals do not add up to 100%. Numbers in the 'other' category are marginal, however, and do not influence or change the overall results significantly.

are still the main source of clean drinking water for 41% of households. In addition, the 2016 DHS showed that 18% of households obtain drinking water from a source that is up to 30 minutes away, while another 14% have to walk for more than 30 minutes to fetch clean drinking water from a public tap or standpipe (GDS, MoH & ICF 2018: 8).

FIGURE 5.2: HOUSEHOLDS' ACCESS TO DRINKING WATER, NATIONAL LEVEL (CENSUS 2010, 2015)
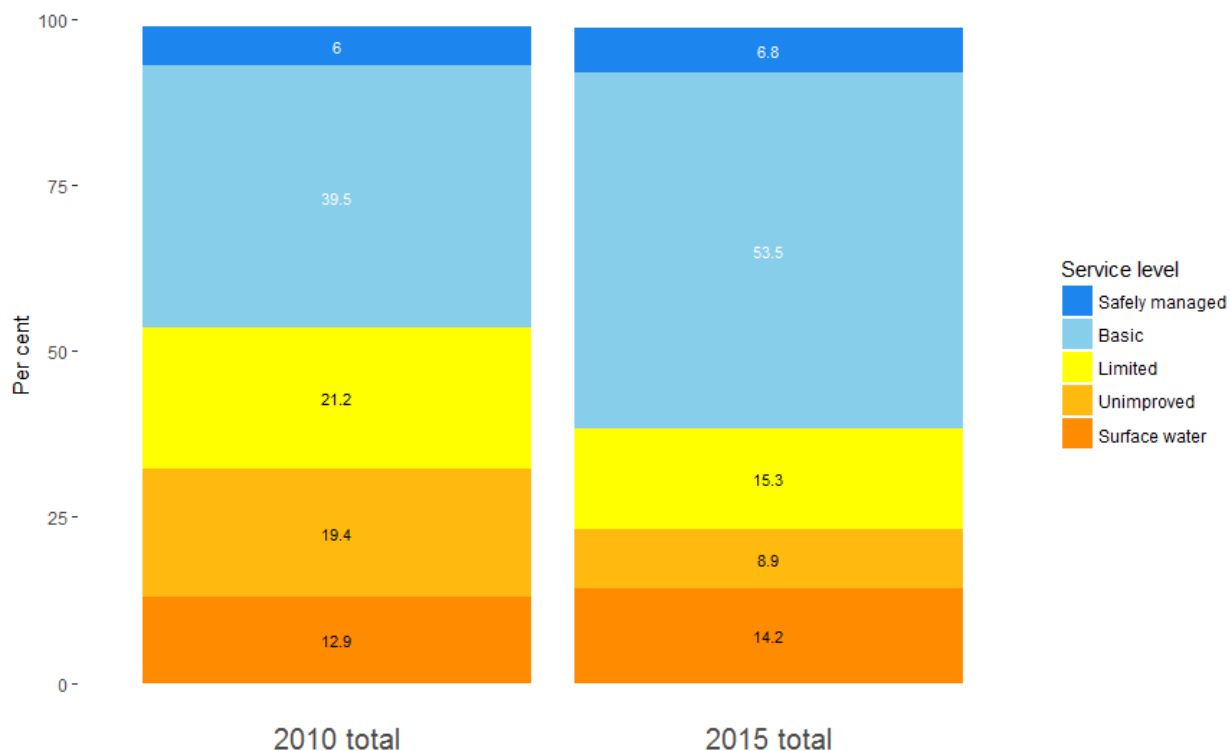
The lack of progress regarding households' access to safely managed water sources is even more pronounced in rural areas where only 1.8% of households had water either pumped or piped into their home, or were using bottled water; that is virtually no difference to the 1.9% recorded in 2010 (Figure 5.3). Almost one in three (29.6%) rural households in 2015 was either using water from an unimproved source or surface water as their main source of drinking water, and although the majority of rural households had access to a basic service level water source, this was mainly driven by access to public taps outside the premises: 45.1% of rural households were using public taps as their main source of drinking water in 2015.

FIGURE 5.3: RURAL HOUSEHOLDS' ACCESS TO DRINKING WATER (CENSUS 2010, 2015)
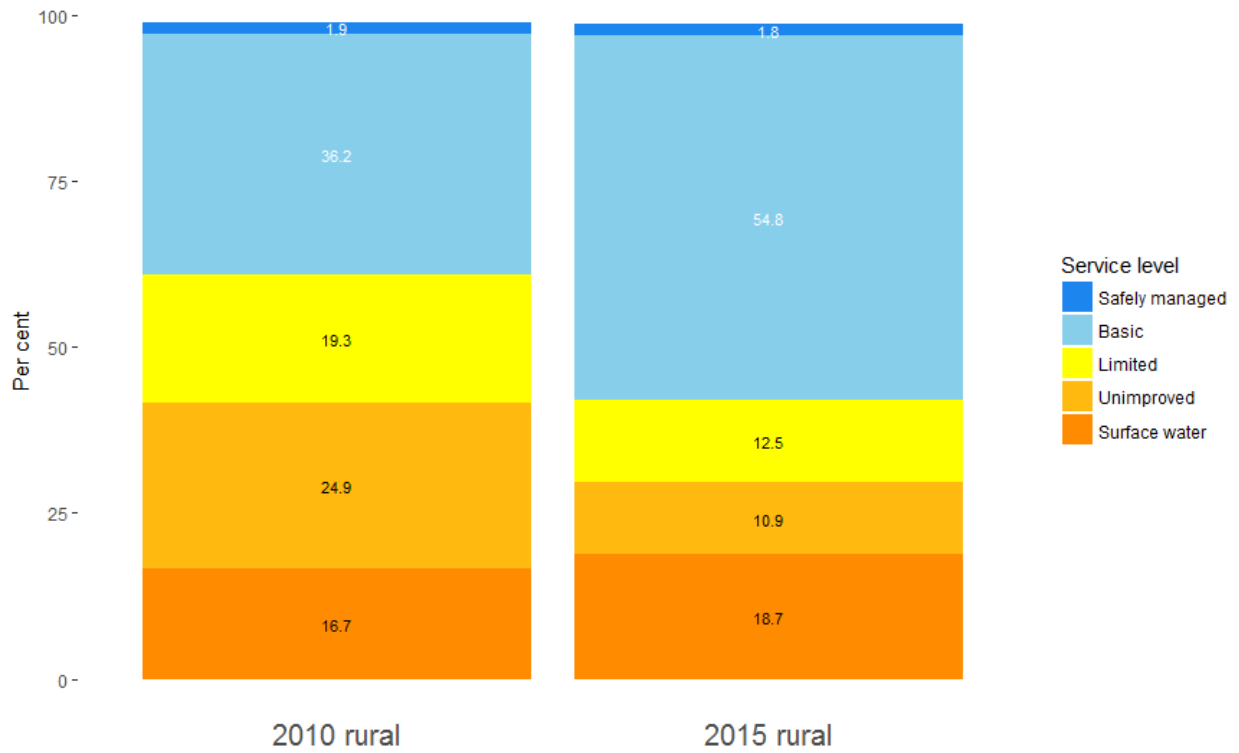
Finally, comparing the situation of urban and rural households (Figure 5.4) demonstrates how especially with regard to the rural population, the achievement of access to safely managed water sources for all by 2030 requires the government's on-going commitment to and investment in building rural infrastructure.

FIGURE 5.4: HOUSEHOLDS' ACCESS TO DRINKING WATER, URBAN/RURAL (CENSUS 2010, 2015)
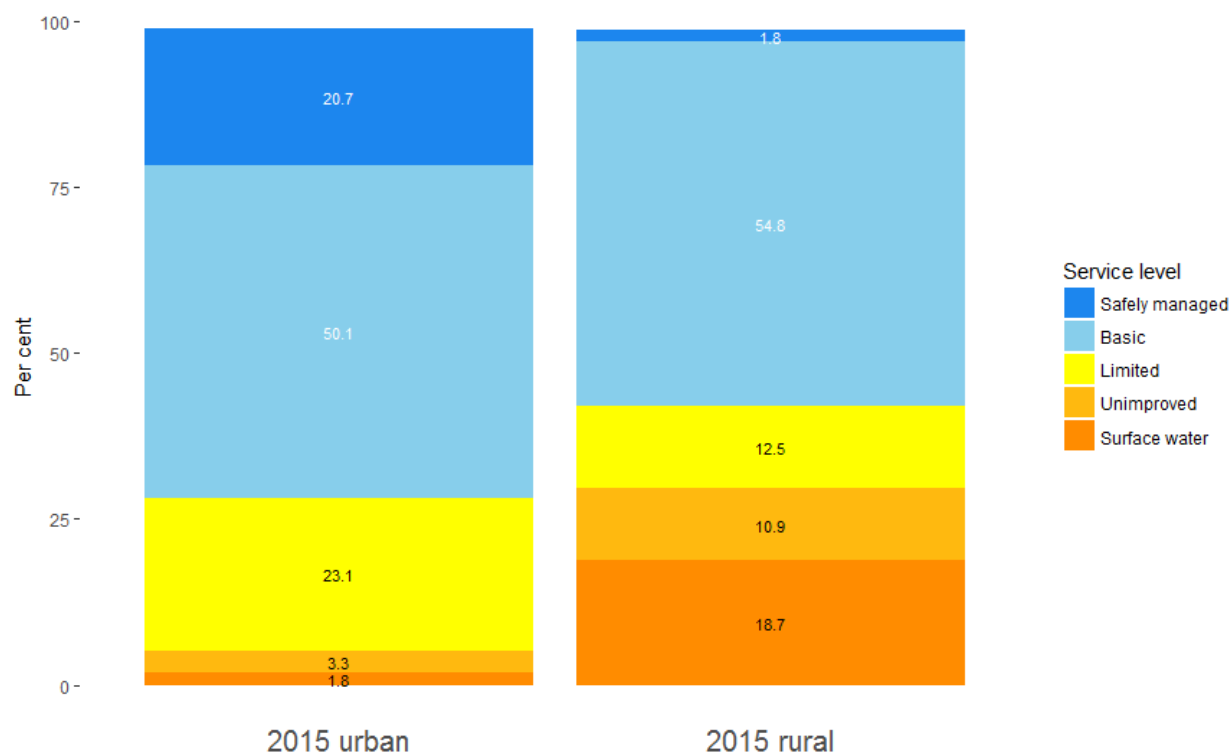
In addition, the 2015 Census data allows for a breakdown to Suco-level. The table below shows those Sucos with the highest percentage of households that rely on surface water as their main source of drinking water.

TABLE 5.2: SUCOS WITH THE HIGHEST RELIANCE ON SURFACE WATER AS MAIN SOURCE OF DRINKING WATER (CENSUS 2015)

Municipality	Administrative post	Suco	Number of households in Suco	Number of people in Suco	Per cent of households using surface water
Baucau	Baguia	Samalari	358	1822	98.6
Lautem	Tutuala	Tutuala	256	1244	95.3
Viqueque	Lacluta	Laline	166	943	95.2
Covalima	Zumalai	Ucecai	40	247	95.0
Baucau	Laga	Saelari	382	2439	91.9
Viqueque	Viqueque	Uai-Mori	242	1142	91.3
Baucau	Quelicai	Maluro	168	763	91.1
Manufahi	Turiscai	Orana	110	753	89.1
Viqueque	Viqueque	Uma Quic	402	1981	88.6
Manufahi	Fatuberlio	Fahinehan	223	1328	86.1

FIGURE 5.5: SUCOS WITH THE HIGHEST RELIANCE ON SURFACE WATER AS MAIN SOURCE OF DRINKING WATER (CENSUS 2015)

Surface water reliance

- ● Major town
- ☐ Municipalities

Households relying on surface water
(% of hhlds in each suco)

- ☐ 0 - 20 %
- ☐ 20 - 40 %
- ☐ 40 - 60 %
- ☐ 60 - 80 %
- ☐ 80 - 100 %

0   25   50   75   100 km
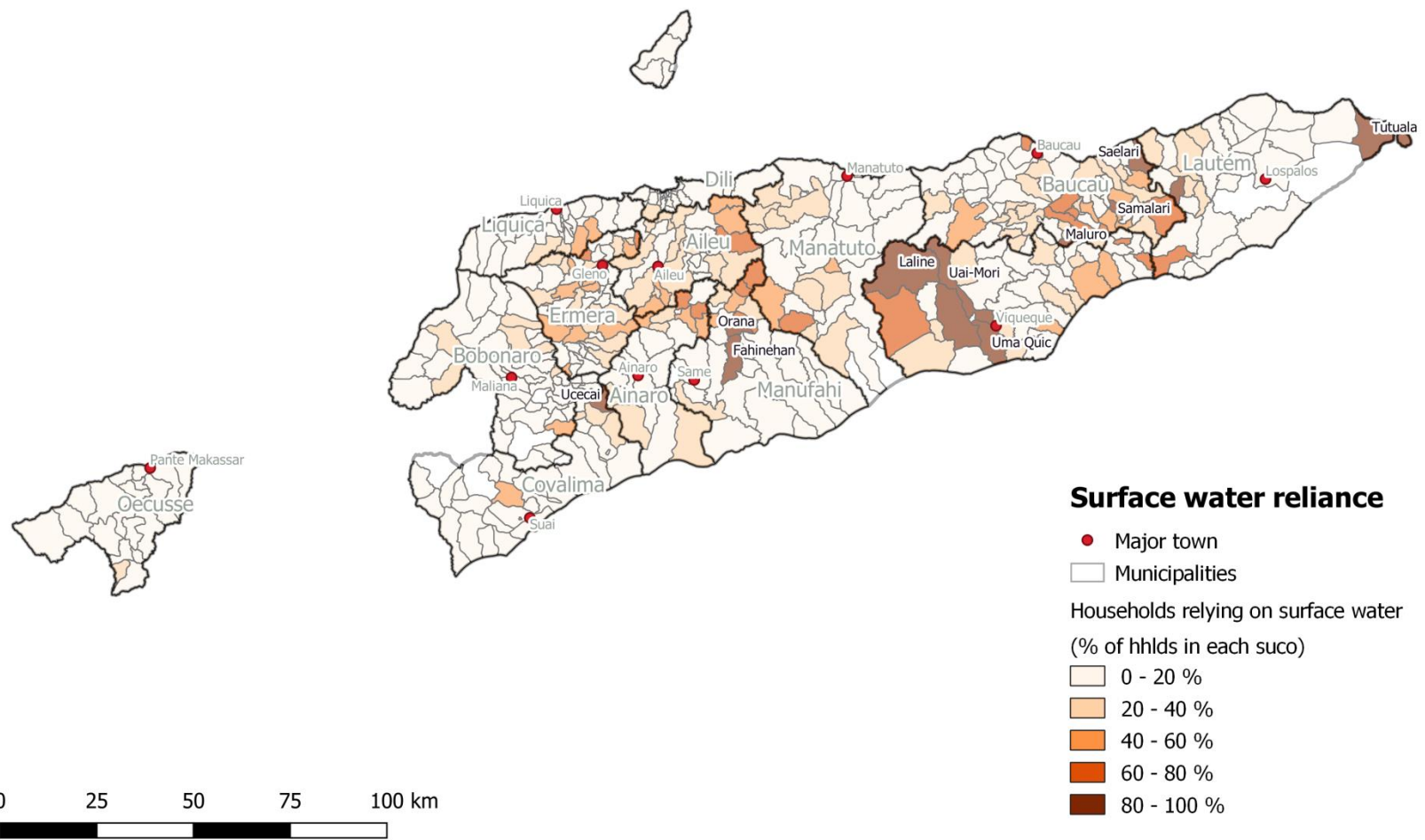
5.2 HUMAN WASTE DISPOSAL MODES

In addition to clean drinking water, an improved sanitation facility is paramount for improving public health and preventing the spread of viruses and diseases. Table 5.3 gives a general overview of improved and unimproved sanitation facilities, a classification shared by, for example, the WHO, Timor-Leste's 2015 Census and the 2016 Timor-Leste Demographic and Health Survey (see ICF 2017: 40-43 for a detailed description of the different toilet types).

TABLE 5.3: TYPES OF SANITATION FACILITIES

Improved sanitation facilities	Unimproved sanitation facilities
Flush or pour-flush to: • Pipe sewer system • Septic tank • Pit latrine Ventilated improved pit latrine Pit latrine with slab Composting toilet	Flush or pour-flush to elsewhere Pit latrine without slap or open pit Bucket Hanging toilet or hanging latrine No facilities or bush or field Public or shared facilities

At the national level, the 2015 Census data is showing an increased use of improved sanitation facilities (+10% from 2010), and a decrease in the proportion of unimproved sanitation facilities (-10%) (Figure 5.6).

FIGURE 5.6: SANITATION FACILITIES IN URBAN AND RURAL AREAS (CENSUS 2015)
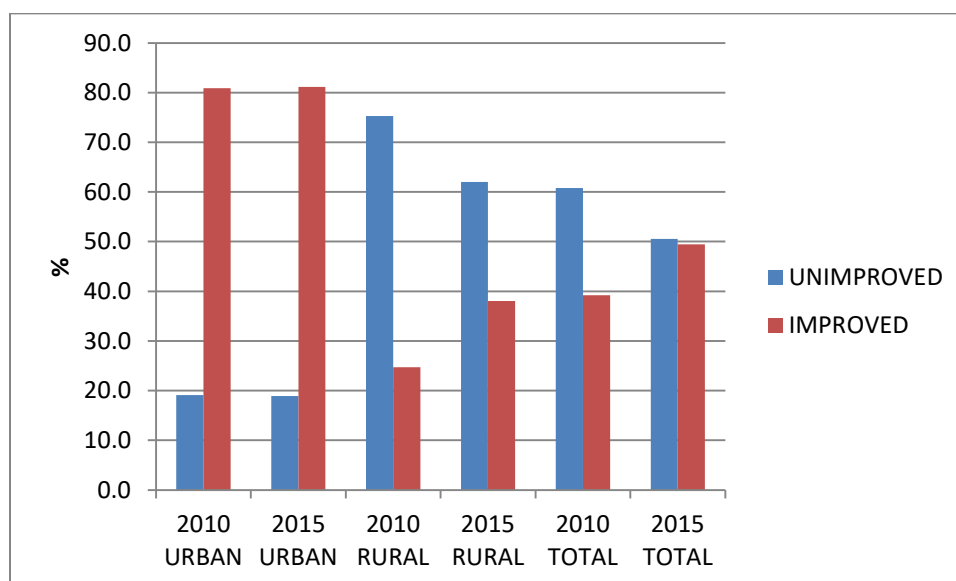
Similar to the data on access to clean drinking water presented in the previous sub-section, for the remainder of this chapter we will use the updated WHO/UNICEF sanitation ladder. SDG 6.2 states the aim of achieving access to adequate and equitable sanitation and hygiene for all and ending open defecation.[13] The two global indicators used to monitor progress towards these goals are:

a) The percentage of the population using safely managed sanitation services; and
b) The percentage of the population practicing open defecation.

The sanitation ladder puts more emphasis on the dimension of wastewater disposal than the improved/unimproved dichotomy, meaning that it does not only matter what kind of toilet a household uses, but what happens with human waste is of equal importance. Safely managed sanitation facilities therefore have the following characteristics:

- Improved facilities
- Not shared with other households
- Excreta are safely disposed of in situ or transported and treated offsite
  (WHO/UNICEF 2017a: 8)

Table 5.4 shows how the 2015 Census categories were mapped on to the WHO/UNICEF Joint Monitoring Programme sanitation ladder. Similar mapping was undertaken for 2010 Census data on sanitation.

TABLE 5.4: MAPPING OF CENSUS SANITATION CATEGORIES TO JMP SANITATION LADDER

Score	WHO/UNICEF Joint Monitoring Programme		Response to Timor-Leste 2015 Census question number	
	Service level	Definition	H8	H9[14]
1	Safely managed	Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite	1. Pour/flush to septic tank/pit	
2	Basic	Use of improved facilities that are not shared with other households	2. Pour/flush to elsewhere 3. Ventilated improved pit latrine (VIP) 4. Pit latrine with slab	1. or 3.
3	Limited	Use of improved facilities shared between two or more households	2. Pour/flush to elsewhere 3. Ventilated improved pit latrine (VIP) 4. Pit latrine with slab	2., 4., 5. or 6.
4	Unimproved	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines	5. Pit latrine without slab/Open pit 6. Hanging toilet/latrine 7. Public latrine	
5	Open defecation	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste	8. No facility or bush	

Overall, the sanitation situation in Timor-Leste has improved between the last two Censuses. The proportion of households with access to safely managed sanitation facilities has risen by around 20 per cent, so that nearly one

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[13] https://sustainabledevelopment.un.org/sdg6

[14] H9 asked about the final disposal of sewage, with corresponding answer categories (1) Septic tank, (2) Pond/field, (3) River/lake/ocean, (4) Hole, (5) Shore/open field, (6) Other.

in three households (31%) in the country was using an improved toilet facility that was not shared with another household and where wastewater was safely disposed of (Figure 5.7). This is a positive trend, even though the goal of achieving universal access to safely managed sanitation for all remains an ambitious target, which becomes especially clear when focusing on the 18% of households who still have to practice open defecation.

FIGURE 5.7: SANITATION LEVELS, NATIONAL LEVEL (CENSUS 2010, 2015)
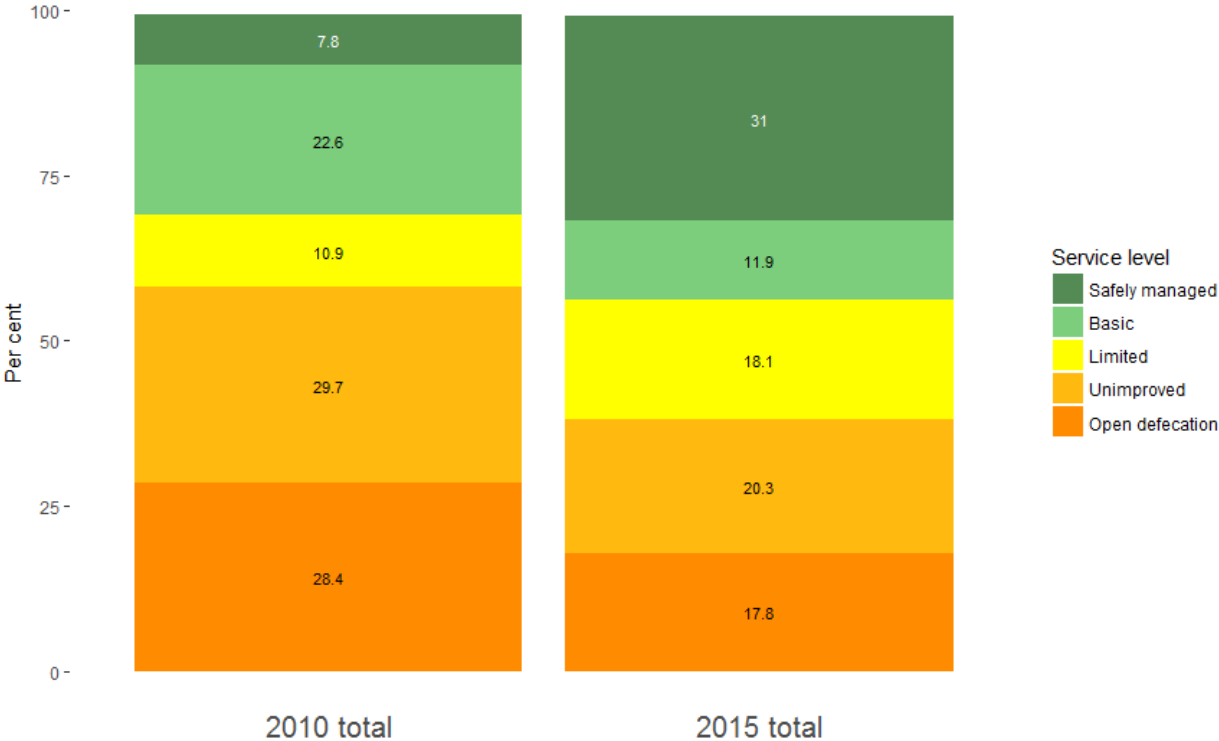
In urban areas, 60% of households do already use safely managed sanitation facilities, an improvement from the 18% using that kind of toilet facility in 2010. However, the urban-rural divide regarding access to safely managed drinking water sources is even wider when exploring access to sanitation facilities.

Figure 5.8 shows that while open defecation in urban areas is highly unusual (below 2%), it is still the main disposal mode for human waste for 1 in 4 households in rural areas, in addition to the 27% of households who are using open pits, hanging toilets or public latrines. Therefore, more than half of all rural households either practice open defecation or have to make do with facilities at an unimproved service level.
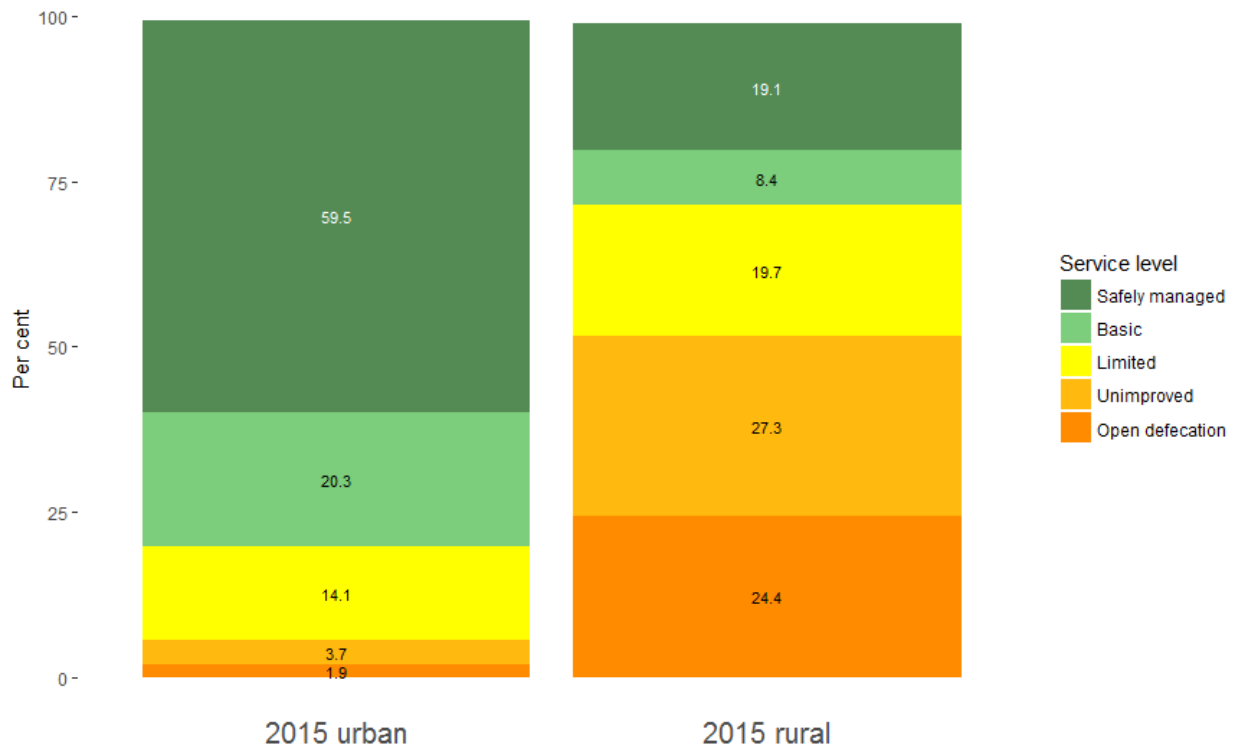
The sanitation ladder incorporates the type of toilet facility, as well as the final disposal of sewage. In order to describe the divide between urban and rural sanitation better, Figure 5.9 presents data on the final disposal mode of sewage. In urban areas, almost 70% of household waste ends up in a septic tank, while a quarter of all households still dispose of human waste in a hole in the ground.

FIGURE 5.9: FINAL DISPOSAL OF SEWAGE (CENSUS 2015)
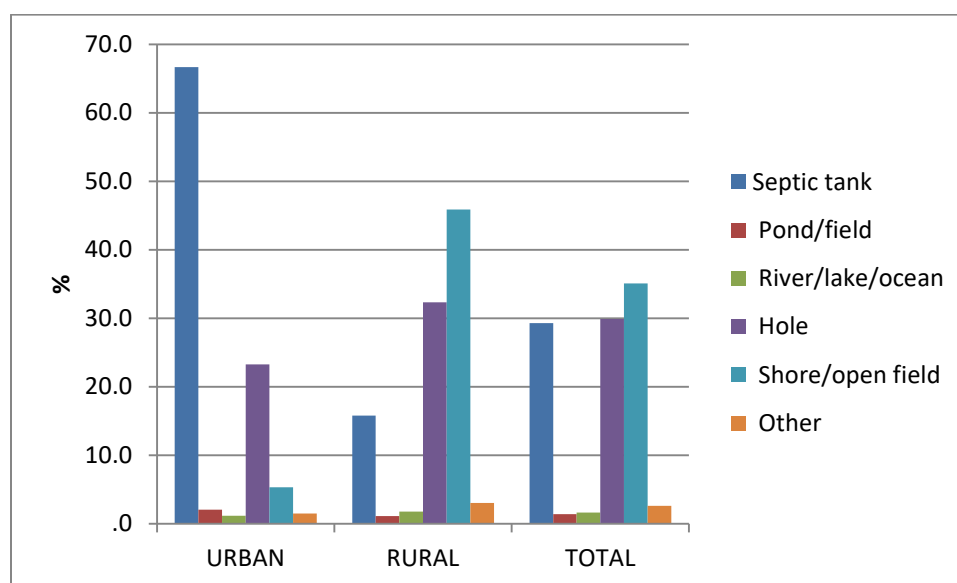
In rural areas, however, disposing of human waste in the sea or in an open field is still the dominant waste disposal mode for almost every other household. This is an ideal breeding ground for disease-causing microbes that cause a primary human health risk in contaminated waters, as well as through the consumption of agricultural products contaminated with faeces.

Similar to households' main sources of drinking water, the 2015 Census data allows for a more fine-grained geographical analysis down to Suco level. The table below shows the 10 Sucos with the highest ratio of households practicing open defecation.

TABLE 5.5: SUCOS WITH HIGHEST RATIO OF HOUSEHOLDS PRACTICING OPEN DEFECATION (CENSUS 2015)

Municipality	Administrative post	Suco	Number of households in Suco	Number of people in Suco	Per cent of households practicing open defecation
Covalima	Zumalai	Ucecai	40	247	97.5
Viqueque	Viqueque	Uai-Mori	242	1142	93.0
Viqueque	Lacluta	Laline	166	943	91.6
Covalima	Fohorem	Dato Rua	164	803	89.0
Lautem	Lospalos	Cacavei	205	974	87.8
Viqueque	Ossu	Liaruca	241	1008	85.5
Bobonaro	Bobonaro	Leber	226	1225	85.4
Covalima	Fohorem	Dato Tolu	215	1021	84.7
Lautem	Lospalos	Leuro	180	812	84.4
Oecusse	Pante Macassar	Taiboco	1151	5124	83.4

FIGURE 5.10: SUCOS WITH HIGHEST RATIO OF HOUSEHOLDS PRACTICING OPEN DEFECATION (CENSUS 2015)

Open defecation ratios

● Major towns

☐ Municipalities

Households practicing open defecation
(% of total hhlds in each suco)

☐ 0 - 20 %
☐ 20 - 40 %
☐ 40 - 60 %
☐ 60 - 80 %
☐ 80 - 100 %

0   25   50   75   100 km
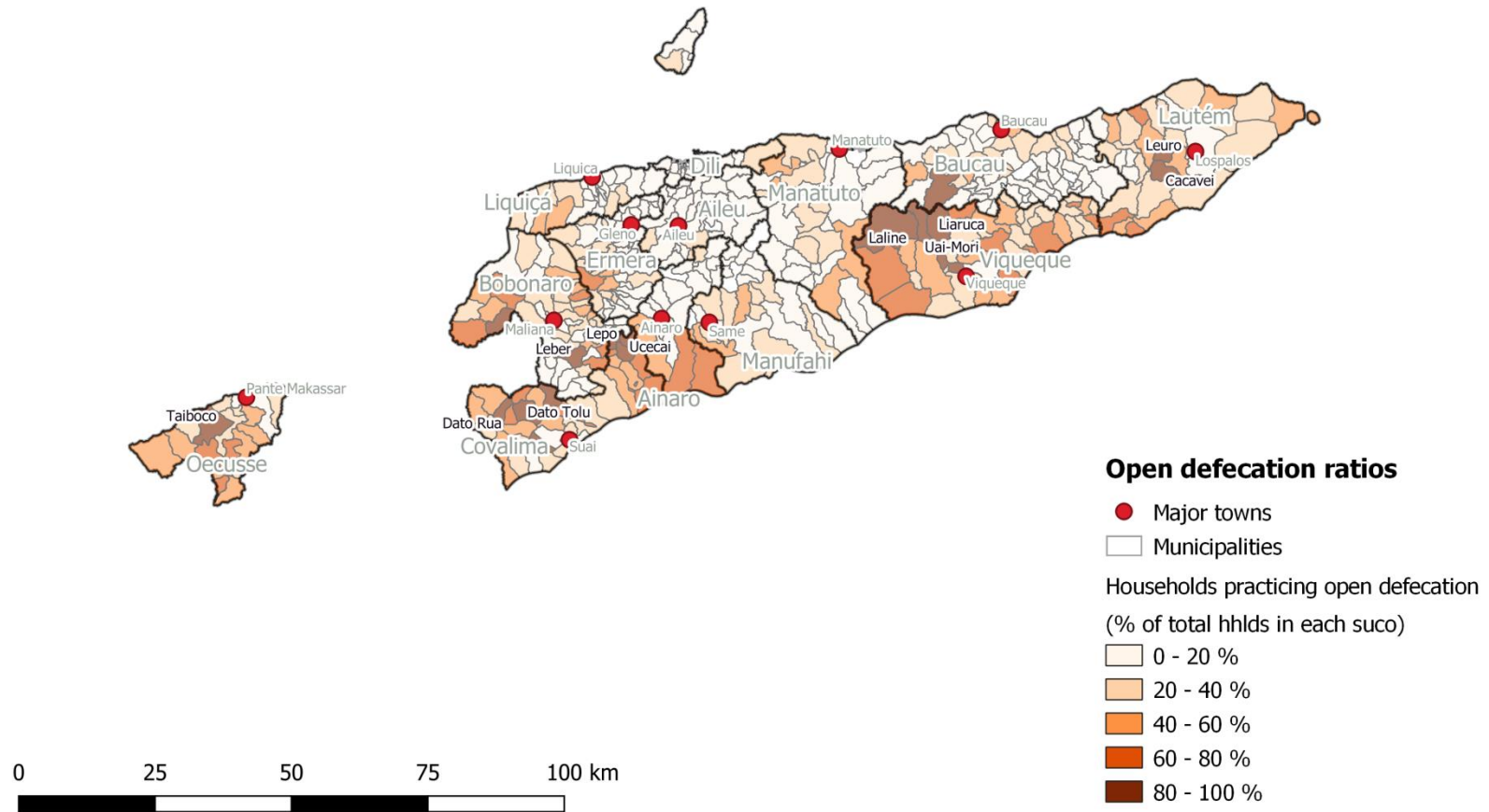
5.3 SUMMARY

This chapter explored the access to clean drinking water and safely managed sanitation facilities of private households in Timor-Leste. While good progress had been made in achieving the Millennium Development Goal, the data presented here shows that on-going commitment and investment is needed in order to achieve access to safely managed water sources and sanitation for all by 2030.

As for access to safely managed drinking water, more than half of all households at a national level had access to outdoor taps or pumps, or public taps. That is more than a 10% increase since the 2010 Census, and certainly a major improvement to the lives of many. Nonetheless, progress in achieving access to safely managed water sources has been limited, with only 6.8% of all households being able to use these water sources. Furthermore, analysis at Suco level shows the extent of households that have to rely on surface water as their main source of drinking water; in some areas, such as Samalari in Baucau, virtually all households (98.6%) use surface water for drinking.

In rural areas, the situation is far worse than in towns and cities. Nearly one in three households (29.6%) are relying on either surface water or water from an unimproved source as their main source of drinking water, and only 1.8% have access to safely managed water sources.

Regarding sanitation, at a national level good progress has been made; nearly a third of households (31%) are using an improved toilet facility that is not shared with another households and where waste is safely disposed of. However, nearly 1 in 5 households (18%) nationally still have to practice open defecation. In rural areas, more than half of all households (51.7%) either practice open defecation or use an unimproved toilet facility. Analysis at Suco level shows how in some Sucos, almost all households have to practice open defecation.

Further analysis is needed regarding the interplay of access to clean drinking water and sanitation and health outcomes, especially in children. The Suco-level data presented here should only be seen as a first step in that direction. However, what becomes clear even at this early stage is the connectedness of drinking water supply and sanitation: three out of the ten Sucos listed in Tables 5.2 and 5.5 (Laline and Uai-Mori in Viqueque, Ucecai in Covalima) experience a poor supply of clean drinking water, as well as an extraordinarily bad sanitation situation.

In summary, water and sanitation related diseases are still a major concern in Timor-Leste, threatening the lives of especially the youngest in society, and causing huge costs, both for people and for the economy. Progress towards achieving the Sustainable Development Goals on water and sanitation has been limited so far, and especially in rural areas, work remains to be done in order to improve the lives of the majority of the population and to achieve access to clean drinking water and sanitation for all.

6 ENERGY

Information on the energy fuels used by households is collected for two main reasons: firstly, as a proxy variable, the data on energy fuels provides information about the households' socio-economic status, and secondly, the use of some cooking fuels, especially when used indoors, can have detrimental effects on household members' health. For example, indoor air pollution is associated with inflammation of the airways and lungs, pneumonia, chronic bronchitis, stroke, lung cancer and damage to the immune defence system generally. The World Health Organization estimates that each year 3.8 million people die prematurely from illnesses attributable to the household air pollution caused by the inefficient use of solid fuels and kerosene for cooking (World Health Organization 2018). Women and children are often the ones spending the most time indoors and in the vicinity of a hearth, therefore they have particularly high levels of exposure to polluted air if unclean cooking fuels are used.

6.1 COOKING FUELS

Cooking fuels are categorised here into three different categories:

- Clean cooking fuels are electricity and cooking gas (LPG)
- Marginally clean cooking fuels, such as kerosene and bio gas and
- Unclean energy sources, such as wood

At a national level, unclean energy sources are still the predominantly used cooking fuel – 82% of households rely on wood to prepare food. In the rural areas, this proportion is even higher at 92% (Table 6.1). On the positive side, in urban areas we can see a 20% drop in the use of unclean energy sources for cooking, and a 20% rise in the use of clean sources such as electricity and gas. While this trend is encouraging, the high proportion of households in rural areas using unclean energy sources for food preparation is a reason for concern.

TABLE 6.1: COOKING FUEL USED BY HOUSEHOLDS IN PER CENT (CENSUS 2015)

	2010 URBAN	2015 URBAN	2010 RURAL	2015 RURAL	2010 TOTAL	2015 TOTAL
clean	11.8	32.0	1.3	6.0	4.0	12.9
marginally clean	14.2	14.6	3.4	1.9	6.2	5.3
unclean	74.0	53.4	95.3	92.2	89.8	81.8

The use of cooking fuels is also linked to electrification rates. One of the goals of Timor-Leste's Strategic Development Plan is "by 2030 to ensure universal access to affordable, reliable and modern energy services", and electricity has already reached more than 70 per cent of the population (Government of Timor-Leste 2017: 14f). However, between 30% (Asian Development Bank 2016) and 34% (GDS, MoH & ICF 2018: 7) of rural households do not have access to electricity. In addition, the price of appliances that use clean cooking fuel exceeds what most rural households are able to pay.

On a more positive note, it is common for rural households to have the kitchen outside the main living quarters (ICF 2018: 9), so exposure to micro-particles may be less pronounced than in dwellings where all cooking activities take place inside the house.

6.2 LIGHTING FUEL

Similar to cooking fuels, fuels that households use to light their homes can be classified as clean, marginally clean, and unclean. Solar and electricity are considered clean fuels, kerosene, candles and biogas are classed as marginally clean, while wood and candle berry trees are regarded unclean fuels.

In general, the data shows a significant increase in the use of clean lighting fuels. At a national level, 82% of households now use solar or electricity to light their homes, more than double the value of 40% recorded in the 2010 Census (Figure 6.1).

FIGURE 6.1: LIGHTING FUELS USED BY PRIVATE HOUSEHOLDS (CENSUS 2010, 2015)
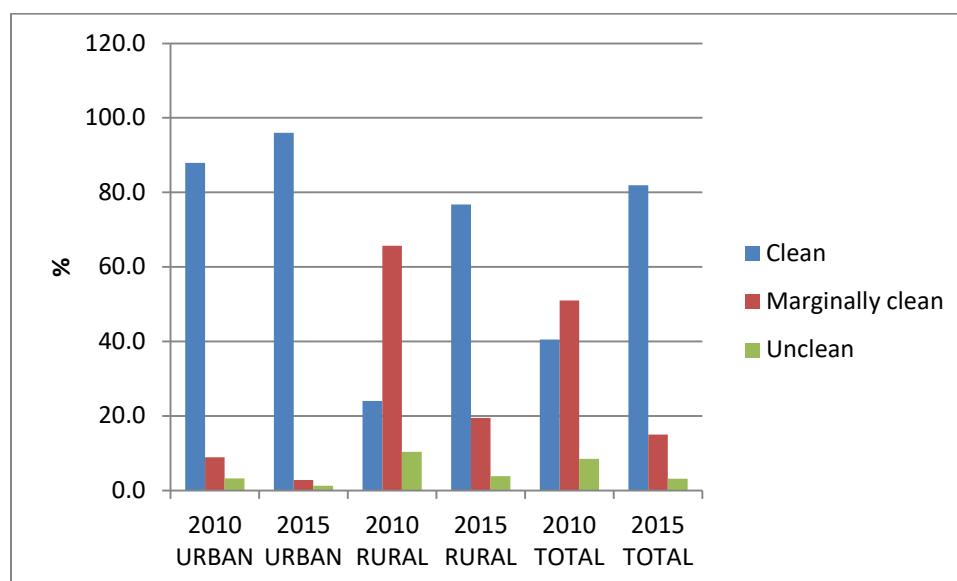
In rural areas, the use of clean lighting fuels tripled from 24% in 2010 to 77% in 2015, while the use of marginally clean fuels outside Dili fell from more than 60% to 20%. The same trend can be observed for all municipalities (Table 6.2). In almost all municipalities, between 78 and 86 per cent of households had access to clean lighting fuel in 2015 – the only outlier being Viqueque with only 70% of households using clean fuels for lighting.

TABLE 6.2: HOUSEHOLDS WITH ACCESS TO CLEAN LIGHTING FUELS, SELECTED MUNICIPALITIES, PER CENT (CENSUS 2010, 2015)

	Aileu	Baucau	Bobonaro	Covalima	Dili	Ermera	Lautem	Liquiça	Manatuto	Viqueque	Timor-Leste
2010	30.2	30.8	28.7	29.5	89.5	27.1	36.5	30	44.7	33.9	40.5
2015	84.9	77.6	79.9	87.3	96	78.5	86.6	80.3	83.9	69.8	81.9
Increase	+54.7	+46.8	+51.2	+57.8	+6.5	+51.4	+50.1	+50.3	+39.2	+35.9	+41.4

7 HOUSEHOLD ASSETS

Measuring the basic facilities and amenities available to inhabitants of a dwelling is an alternative way of measuring living standards. Where income measures in household surveys are costly and complex, especially in countries where work opportunities tend to be seasonal and outside the 'formal' labour market, household assets can be easily recorded during a household interview and provide adequate information about a household's living standards.

The most commonly owned household item, in rural as well as in urban areas, is a telephone or mobile phone (Figure 7.1). At the national level, 81% of households own a phone, and 37% own a television.

Overall, ownership patterns are very different between rural and urban areas, however. For example, while almost every other household in urban areas has access to a motorcycle (47%); this is only true for around 15% of rural households. Similarly, only 6% of households in rural areas own a refrigerator – a small proportion compared to the 42% of households in urban areas that are able to store their food in a refrigerator.

FIGURE 7.1: OWNERSHIP OF HOUSEHOLD ASSETS (CENSUS 2015)
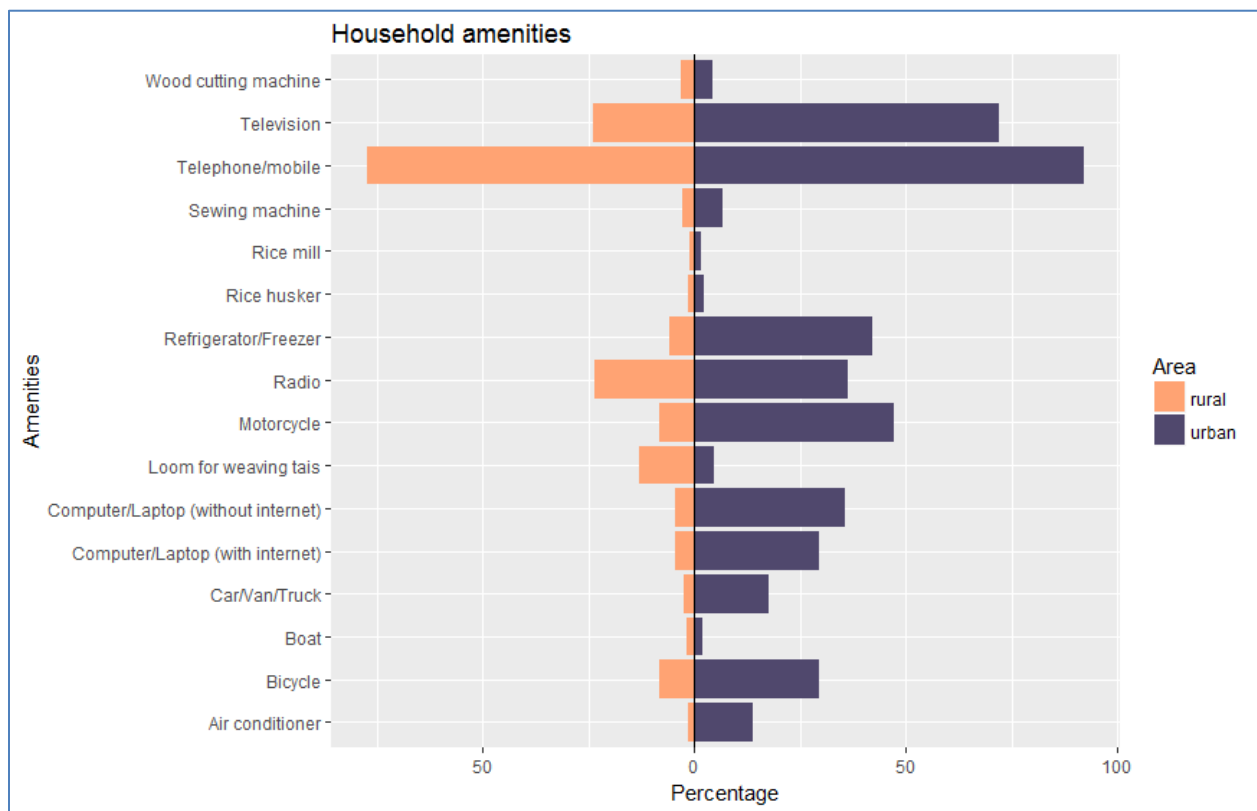
Comparing different parts of the country (Table 7.1) shows similar ownership patterns across rural municipalities, and underlines the special role of urban areas. For example, almost 1 in 4 households in Dili has regular access to a laptop; in Ermera, this is true for just under 5% of households.

In addition, only around 3% of households in Aileu, Ainaro, and Ermera own a refrigerator, while in Dili, this is true for nearly 1 out of 2 households.

TABLE 7.1: HOUSEHOLDS BY OWNERSHIP OF HOUSEHOLD ASSETS, MUNICIPALITIES, PER CENT (CENSUS 2015)

	Aileu	Ainaro	Baucau	Bobonaro	Covalima	Dili	Ermera	Lautem	Liquiça	Manatuto	Manufahi	Oecusse	Viqueque
Telephone/mobile	79.7	81.0	77.0	77.0	82.0	91.6	78.7	79.8	82.4	76.8	84.1	73.0	76.7
Television	25.8	21.1	31.6	32.3	34.6	72.1	17.7	36.4	27.7	38.4	26.8	17.0	27.1
Radio	32.6	33.9	23.7	25.6	18.6	35.0	34.6	23.4	32.7	19.7	31.7	10.8	14.5
Refrigerator/Freezer	3.9	3.1	10.8	7.8	9.2	45.1	2.8	12.2	10.4	14.3	6.6	5.7	7.4
Air conditioner	1.4	1.0	1.9	1.7	2.2	15.5	1.0	2.8	2.0	2.7	2.4	2.0	1.9
Computer/Laptop (without internet)	6.6	4.3	7.1	5.7	7.1	38.6	4.8	7.2	7.2	7.6	6.1	5.3	4.9
Computer/Laptop (with internet)	6.1	4.6	6.7	5.7	6.6	31.0	4.9	6.8	6.7	7.5	7.2	5.0	5.8
Motorcycle	15.2	12.9	14.0	20.8	33.0	46.7	10.2	18.8	18.6	19.5	23.2	17.1	15.0
Bicycle	7.1	6.5	7.4	9.8	16.5	29.0	5.7	14.3	9.6	17.6	16.0	9.3	8.8
Car/van/Truck	2.7	2.6	3.6	3.4	3.5	18.9	3.0	3.6	4.0	3.8	3.2	2.4	2.7
Boat	0.6	0.7	1.9	2.4	2.3	2.9	0.5	1.2	3.4	2.9	2.1	1.5	1.2
Sewing machine	1.6	1.7	4.0	2.7	3.1	6.2	2.3	5.0	2.2	3.8	2.0	3.5	3.5
Wood cutting machine	1.8	2.1	2.8	3.9	5.1	4.0	3.3	4.4	2.2	2.9	3.1	4.6	3.1
Loom for weaving tais	1.1	5.9	11.8	11.8	24.9	2.4	5.4	24.9	1.7	3.1	1.0	37.6	14.0
Rice husker	0.8	0.8	1.9	2.7	1.1	2.1	1.0	1.0	0.8	1.9	0.9	2.1	1.5
Rice mill	0.6	0.5	1.2	1.4	0.9	1.4	0.7	0.8	0.7	1.6	0.8	1.3	1.2

In summary, comparing the assets of households reveals a marked difference between urban and rural areas. For example, while in some municipalities less than 3% of households own a refrigerator, in Dili almost every other household is able to refrigerate and/or freeze food. Similarly, while nearly every other household in Dili owns a motorbike, in rural areas this proportion can be as low as 1 in 10 (Ermera). In general, the numbers indicate a large gap in living standards between Dili and the rest of the country.

8 HOUSING ADEQUACY

Having presented Census data on building materials used to construct external walls, floors, and roofs of dwellings, as well as exploring drinking water sources, sanitation, and the kind of fuel used for cooking and lighting, this chapter aggregates the data into a summarised measure of housing quality. The aim of this exercise is to produce an estimate of the share of deficient housing stock in the country.

There are some limitations to the Census data as certain information had not been collected as part of the 2015 Census, such as age of dwelling, house value, persons per room, or structure types (e.g. detached single-unit housing, semi-detached dwellings, multi-housing units). However, in the absence of a fully-fledged housing survey, the aggregated Census dwelling information can serve as a proxy for the quality of Timor-Leste's housing stock.

The methodology used here is simple: for example, wall, roofing and floor materials are assigned values according to their durability. Similarly, the main source of drinking water is ranked based on how hygienic the conditions of the water source are, and the same approach is used for the assessment of fuel used for lighting and cooking. None of the individual variables on their own constitute inadequate housing; therefore, an aggregate measure is used to determine the quality of the dwelling. For example, a house with concrete walls and tiled roof, with drinking water being piped into the dwelling and human waste being flushed to a septic tank would receive a better overall score than a dwelling with wooden walls and a clay roof, where drinking water is only available from a nearby lake and no provision exists for human waste disposal. The scoring matrix is shown in more detail in tables 8.1, 8.2 and 8.3.

For example, if the external walls of a building are made of concrete/brick, then the material would be coded as 1 and the wall material would be classified as 'highest quality'. For that category, the dwelling would score a value of 1. Had the same building a roof made of corrugated iron (coded as 2), then the roof would be classified as 'medium quality' and would score a value of 3 for that category, and so on.

Generally, the lower the aggregate score of a dwelling, the higher the overall quality of the accommodation, and the higher the aggregate score assigned to a building, the lower the quality.

TABLE 8.1: HOUSING QUALITY RANKING

Housing Quality	Wall	Floor	Roof	Condition	Water	Human Waste Disposal	Cooking Fuel	Lighting Fuel
	Codes	Codes	Codes	Codes	Codes	Codes	Codes	Codes
Highest (1)	1	2	3	1	7 & 1	1	1	1 & 7
Second highest (2)	3 & 7	1	1	2	2 & 3	3 & 4	2	2 & 4
Medium (3)	6	3	2	0	6	2 & 7	3	3
Second lowest (4)	4	5	4	3	5 & 4	5	4	6
Lowest (5)	5 & 2	4	5 & 6	4	8 & 9 & 10	6 & 8	5 & 6	5

TABLE 8.2: HOUSING QUALITY RANKING, AGGREGATE SCORE

Scores	Housing Quality
8 to 12	Highest quality
13 to 18	Second highest quality
19 to 23	Medium quality
24 to 30	Second lowest quality
31 to 40	Lowest quality

TABLE 8.3: HOUSING QUALITY SCORING MATRIX

Quality Order	Structural Adequacy							
	Walls		**Floor**		**Roof**		**Dwelling Unit Condition**	
	Material	Code	Material	Code	Material	Code	Material	Code
1	Concrete/Brick	1	Tile	2	Tile	3	Good	1
2	Bamboo	3	Concrete/Brick	1	Concrete	1	Mediocre	2
3	Rock	7	Wood	3	Corrugated Iron/Zinc	2	A little Damaged	3
4	Palm Trunk	6	Bamboo	5	Asbestos	4	Severely Damaged	4
5	Corrugated iron/Zinc	4	Soil/Clay	4	Palm Leaves/Thatch/Grass	6		
6	Wood	2			Bamboo	5		
7	Clay/soil	5						
Quality Order	Service Adequacy							
	Drinking water		**Human waste disposal**		**Cooking Fuel**		**Lighting**	
	Material	Code	Material	Code	Material	Code	Material	Code
1	Bottled Water	7	Pour/Flush to Septic Tank/Pit	1	Electricity	1	Electricity	1
2	Piped/Pumped Indoors	1	VIP Latrine	3	Cooking Gas	2	Solar	7
3	Piled/Pumped Outdoors	2	Pit Latrine with Slab	4	Biogas	3	Biogas	2
4	Public Tap	3	Pour Flush to Elsewhere	2	Kerosene	4	Candle/Battery Flashlight	4
5	Rain Water Collection	6	Pit Latrine without Slab/Open Pit	5	Coal	5	Kerosene	3
6	Protected Well/Protected Spring	5	Hanging Toilet Latrine	6	Wood	6	Candlenut/Candleberry Tree	6
7	Tube Well/Borehole	4	No Facility or Bush	8			Wood	5
8	Unprotected Well/Spring	8	Public Latrine	7				
9	Water Vendor/Tank	9						
10	River/Lake/Stream	10						

8.1 URBAN-RURAL HOUSING QUALITY

At the national level, most dwellings (44%) are of medium quality. 6% of dwellings are of the highest quality, and only 0.9% are of the lowest quality. Again, the contrast between Dili and the other municipalities is striking. In Dili, around one in every four dwellings are of the highest quality, around 80% of dwelling are ranked in the top-quality categories, and none of the enumerated dwellings are classed as being of the lowest quality. In contrast, in Ainaro, Baucau, Oecusse and Viqueque over a third of all dwelling are categorised as being either of lowest or second lowest quality (Figure 8.1).

FIGURE 8.1: HOUSEHOLDS BY HOUSING QUALITY RANKING (CENSUS 2015)
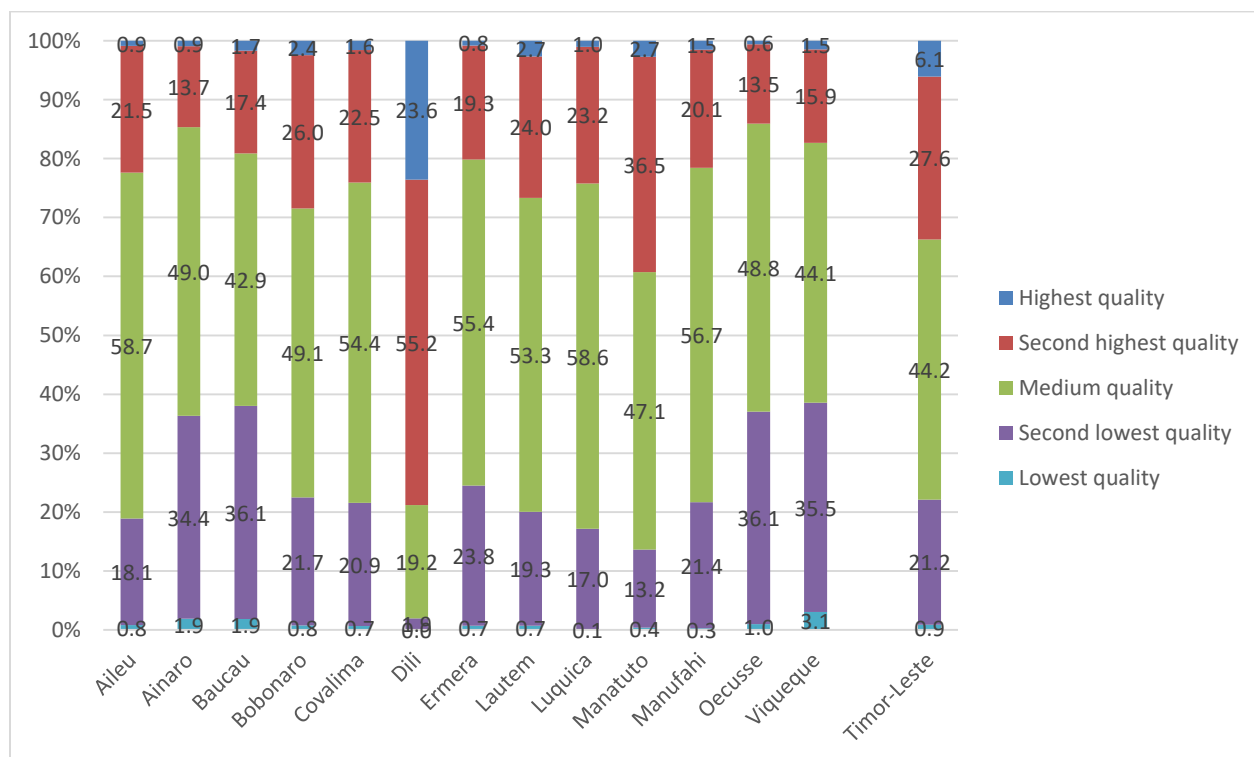
8.2 HOUSING QUALITY AND HOUSEHOLD SIZE

To what extent does housing quality interact with household size, then? The data collected for the 2015 Census shows that smaller households (1-3 household members) are more likely to live in lower-quality housing, while larger households tend to live in higher-quality dwellings (Figure 8.2). This may be explained by the geographical distribution of larger households: Dili has larger households than any other municipality (Section 3.1), and the city also boasts a comparatively high-quality housing stock.

FIGURE 8.2: HOUSEHOLDS BY HOUSING QUALITY AND HOUSEHOLD SIZE (CENSUS 2015)
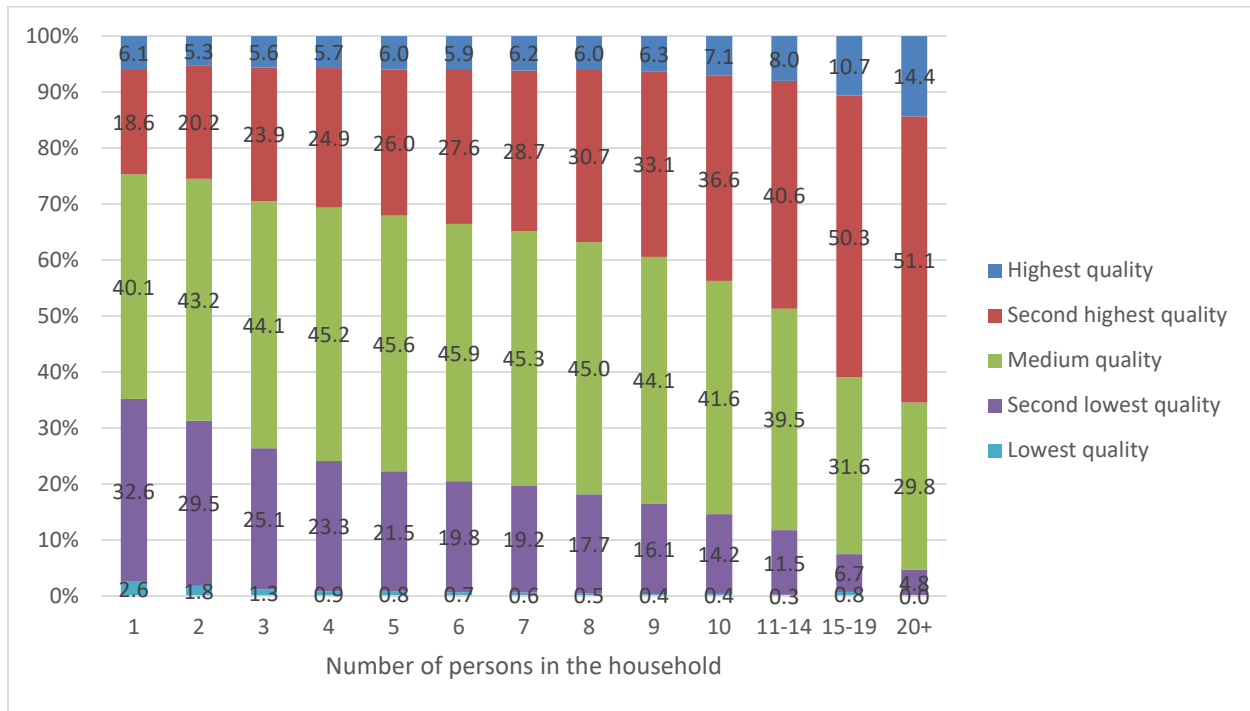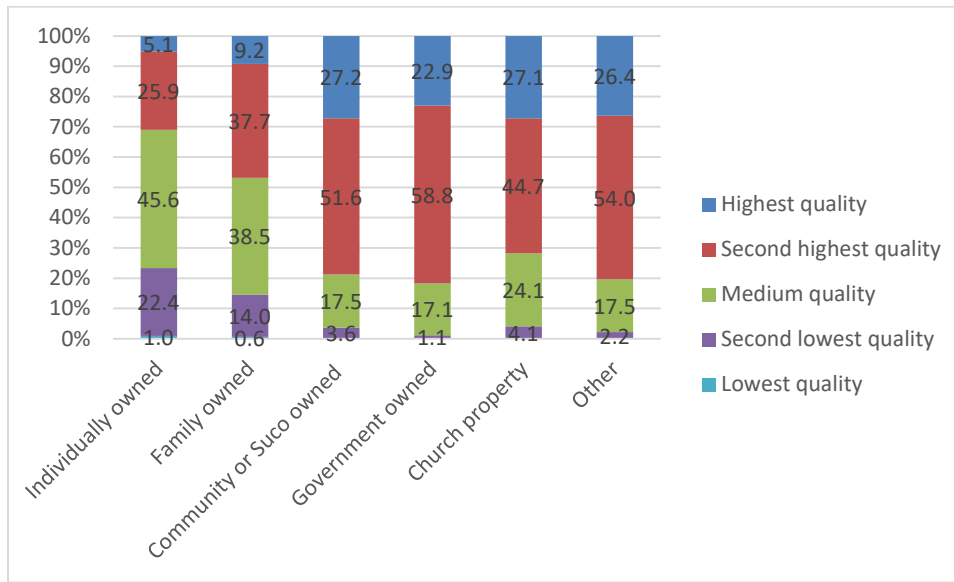

8.3 HOUSING QUALITY AND TENURE

In general, privately owned dwellings are of a lower quality than dwellings owned by the church, the community (or suco), or the government. Between 14% and 23% of individually or family owned dwellings are of either the lowest or second lowest quality, while, for example, only around 1% of government owned properties are of low quality. Around 80% of community or government owned dwellings are of either the highest or the second highest quality, while for family owned properties, this is only true for around 1 out of 2 dwellings (47%).

One explanation for this might be that family owned dwellings tend to be self-built using traditional materials. Often, machinery might not be affordable or available, which may limit the use of, for example, concrete in the construction process. Institutions like the church and the government, however, are more likely to award building contracts to construction companies who are better equipped to use modern and durable materials than private households.

8.4 HOUSING QUALITY BY ECONOMIC ACTIVITY OF HOUSEHOLD HEAD

The data shows a strong correlation between employment status of the household head and the quality of the dwelling. More than 60% of heads of households residing in accommodation of the highest quality are employees in the public or private sector. On the other end of the spectrum, the majority of household heads occupying dwellings of the lowest quality are own-account workers (68%) (Figure 8.4).

FIGURE 8.4: HOUSING QUALITY AND ECONOMIC ACTIVITY OF HOUSEHOLD HEAD (CENSUS 2015)
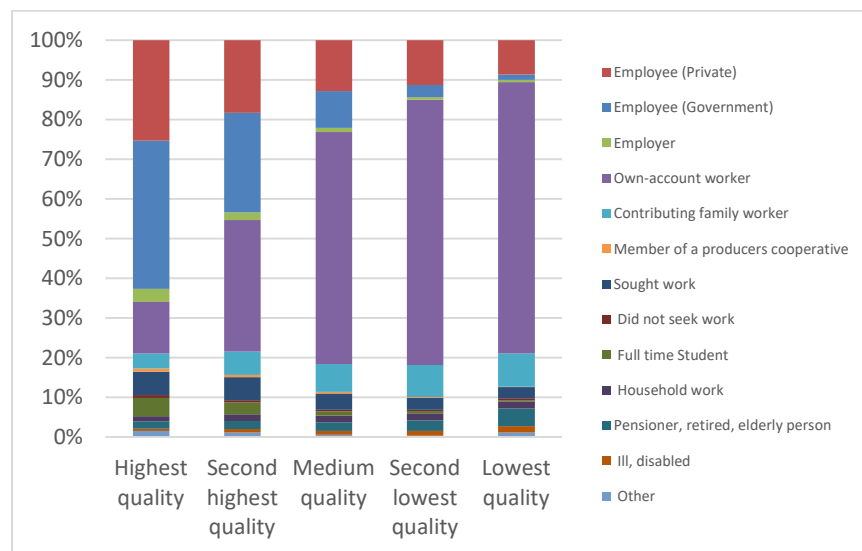
Comparing the different housing quality categories demonstrates how as housing quality decreases, so does the number of employees, while the number of own-account workers increases. This correlation does not necessarily constitute causation, and there may be a number of reasons for these strikingly different employment patterns.

One could speculate that own-account workers tend to work in the informal sector, and that because income in the informal sector is often lower than wages for formal employment, households with a household head working on his or her own account tend to have less income and are therefore forced to live in low-quality housing.

However, more data is needed to support this hypothesis. Again, geographical reasons might be equally valid in this context: the majority of government and private sector jobs are based in Dili, which (as shown in section 8.1) is also where most high-quality dwellings are located. Therefore, household heads living in Dili are more likely to work as employees, and they are also more likely to be able to access higher quality housing, but there might be no causal relationship between housing quality and employment status.

Nonetheless, the relationship between the two variables is an important issue for future research.

8.5 SUMMARY

This chapter explored the adequacy of the available housing stock in urban and rural areas of Timor-Leste. While the information collected during the 2015 Census does by no means constitute an elaborate housing quality survey, variables such as materials used for the construction of walls, floor and roofs, as well as sources of drinking water, human waste disposal, and fuel used for cooking and lighting were used to assess housing quality.

At a national level, only 0.9% of dwellings are classified as being of the lowest quality. While this is encouraging, it is the urban-rural divide that stands out from the data. In Dili, 80% of dwellings are of either the highest or the second highest quality, and no dwellings are in the bottom category. However, in a number of municipalities such as Baucau and Oecusse, over a third of all dwelling are of either the lowest or the second lowest quality.

In terms of household size, bigger households are more likely to live in higher quality dwellings than smaller households. However, bigger households are based in Dili, which is also where the housing stock is of a relatively high quality. More research is needed to explore the correlation of the two.

Dwellings owned by the church and the government tend to be of a higher standard than privately owned dwellings. This may be because privately owned dwellings tend to be self-built using traditional materials, as often there is a lack of machinery and/or expertise. Government and church buildings, on the other hand, tend to be built by construction companies with a different set of resources at their disposal, resulting in an overall higher quality of buildings.

Another area that is worth investigating further is the relationship between employment status of the household head and the quality of the occupied dwelling. Dwellings of the highest quality are predominantly occupied by government and private sector employees, while the proportion of own-account workers seems to rise the lower the quality of a dwelling is. Further research should investigate whether this is caused by income differences (i.e. own-account workers cannot afford higher quality housing), or if this is just a geographical correlation – most employees work in Dili, which is also where the overall housing stock is of a higher quality compared to the municipalities.

To sum up, this chapter has demonstrated the difference in living standards between Dili and the rest of the country, something that will be addressed further in the following final chapter.

9 CONCLUSION

The main issue evolving from the 2015 Census data is the vast divide between urban areas, Dili in particular, and the rest of Timor-Leste. As things stand, living standards seem to improve mainly in the country's capital, while most of the other municipalities are left behind.

Some issues affect all areas, urban or not, like the extraordinarily large household size of 5.8, much larger than in neighbouring countries. However, when exploring the age of household heads it becomes clear that household heads tend to be younger in urban than in rural areas. While the mean age of household heads is 42 in Dili, it is 50 for all other municipalities combined. More research is needed on demographic trends in the municipalities, but the data seems to indicate an ageing rural population which given the lack of resources in those areas might make rural households more vulnerable.

As for the situation of households with a female household head, the data shows a big gap in educational levels between male and female household heads. Again, the situation in Dili is very different from the rest of the country. While in Dili 70% of female household heads had some form of formal education, in some municipalities like Oecussi and Ermera 80% of female household heads have never completed any form of formal education. This situation is potentially exacerbated by the high proportion of widows heading households who cannot rely on the support of a cohabiting partner.

In terms of general living conditions, housing in rural areas is primarily of lower quality than in urban areas. External walls are predominantly made of traditional materials such as bamboo, wood, and mud, instead of concrete and bricks, the main wall material used in Dili. Even though there is a nationwide trend towards using more durable materials for floors, 65% of floors in rural areas are still made of non-durable material such as wood, soil and bamboo. Both wall and flooring materials of a dwelling play an important role in improving the living standard of its inhabitants, especially in tropical countries with prolonged rainy seasons.

Water supply and sanitation is another problematic area. Less than 1 in 10 households nationally (6.8%) have access to safely managed water sources. In rural areas, nearly every third household (29.6%) is relying on surface water or water from an unimproved source as their main source of drinking water.

Nearly 1 in 5 households are still practicing open defecation. The proportion is even higher in rural areas where more than half of all households (51.7%) are relieving themselves in bushes or fields or use an unimproved toilet facility. It is evident that a high level of commitment and investment from policy makers is needed in order to achieve universal access to clean drinking water and sanitation for all by 2030.

As for energy sources, 90% of households in rural areas are using unclean sources of cooking fuel, thereby exposing household members to increased health risks.[15] On a similar note, only 6% of rural households have access to a refrigerator/freezer, compared to nearly 50% in urban areas.

In summary, improving the living conditions of the rural population remains one of the key areas for Timor-Leste's development for a number of reasons. If people in rural areas are left behind, this creates an even bigger incentive for rural-urban migration, especially for young people. This, in return, puts an extra strain on already overburdened urban areas and – as qualification levels of those migrating from the municipalities to Dili tend to be low which contributes to the rise of the 'urban poor'.

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[15] Stating the obvious, this often happens more out of necessity than out of choice. If a third of rural households do not have access to electricity (ICF 2017: 7), gas bottles are not available and gas- or electricity-based cooking appliances are too expensive, then fire wood is one of the few available sources of cooking fuel.

A separate analytical report (GDS, forthcoming) on migration data collected for the 2015 Census will explore the issue of rural-urban migration in more detail. What stands out from the data is that for the 5 years preceding the latest Census, Dili is the only municipality with a gain in net migration, while all other municipalities are witnessing shrinking numbers of residents. Furthermore, it is pre-dominantly young people migrating internally, mainly in the age group 15-29, with a significantly higher literacy rate than non-migrants (around 90% for recent internal migrants versus around 60% for non-migrants). This outflow of literate people of prime working age from the municipalities into the capital should be a reason for concern, as it is likely to exacerbate the lower living standards in the municipalities even further.

Where essential infrastructure is missing to connect rural areas to urban markets (e.g. roads, electricity, storage facilities), this constitutes a wasted opportunity in terms of meeting the demands of the urban population. A recent report by the Food and Agricultural Organization of the United Nations emphasised that in order to reduce overall levels of poverty economic development of rural areas was as important as that of urban areas, because

> Resources need to go to rural areas not only because that is where most of the poor and hungry live, but also because broad-based rural economic development is a powerful force for change. Prosperous rural economies provide alternatives to rural people who see outmigration as their only chance of escaping poverty and hunger. (FAO 2017: xv-xvi)

In other words, for Timor-Leste to raise its overall levels of productivity and living standards, it is imperative for infrastructure projects to target all of the population. Rural electrification, roads and the construction of proper sanitation systems in the municipalities will almost certainly do more for overall economic development and for improving the living standards of the majority of the population than insular big-ticket infrastructure projects from which only a few benefit. To this end, the Census data presented in this and related GDS reports constitutes a solid, impartial source of information to be used for future policy and investment decisions.

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