Food Security in Africa's Secondary Cities: No. 3. Dschang, Cameroon

FOOD SECURITY IN AFRICA'S SECONDARY CITIES: NO. 3. DSCHANG, CAMEROON

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Previous Publications in the AFSUN Series

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1. INTRODUCTION

This report forms part of the African Food Security Urban Network's effort to increase knowledge on urban food systems and household food insecurity in Africa's cities. Focusing on food security in the municipality of Dschang in the West region of Cameroon, the report builds on two previous studies on the secondary cities of Mzuzu, Malawi (Riley et al., 2018) and the Oshakati-Ongwediva-Ondangwa urban corridor in northern Namibia (Nickanor et al., 2019). Combined with AFSUN's research in low-income urban neighbourhoods of Southern African cities (Crush and Battersby, 2016; Frayne et al., 2018; AFSUN, 2020) and the investigations of the Consuming Urban Poverty (CUP) project (Battersby and Watson, 2019; CUP, 2020), these reports confirm that household food insecurity is a widespread problem in smaller African cities, linked to high levels of poverty, rising food prices, high unemployment, and limited opportunities to produce food. While population density in Sub-Saharan Africa is still lower than in other regions, it has the highest population growth rates: the UNDP (2020) projects the population of sub-Saharan Africa to double by 2050 (to around 2.5 billion) while the rest of the world's regions combined will grow by about 7% in the same amount of time. Urbanization will undoubtedly be a key feature of this population boom, and African countries will continue to grapple with growing food insecurity in their cities.

Food security prevails when "all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 2008) and has four main dimensions: stability, availability, accessibility, and utilization. These dimensions cover a wide range of factors including sufficient amounts and types of food, and the ability to purchase or produce food in sufficient quantities and types, including storage, processing, and consumption. Food insecurity thus exists when food is unavailable, where individuals or households do not have the means to obtain it, when it is not available at all times or when individuals do not have access to safe and culturally appropriate food (FAO, 2003). About one in every four people in Sub-Saharan Africa lacks sufficient food to sustain an active and healthy life. Objective 1 of the Millennium Development Goals of cutting extreme poverty and hunger in half by 2015 was not achieved and it is estimated that 239 million people in Sub-Saharan Africa suffer hunger and that this number is growing (FAO et al., 2017).

Food insecurity in Africa is associated with environmental variables such as climate change (Luan et al., 2013; Muller et al., 2011), poverty, lack

of access to food, and demographic and economic factors. The "nutrition transition" from locally sourced, minimally processed traditional foods to highly processed foods made from globally traded commodities is a major challenge for urban food security in Africa (Abrahams et al., 2011; Bloem and de Pee, 2017). The transition is associated with rising levels of obesity and non-communicable diseases such as diabetes and heart disease. This has given rise to the triple burden of malnutrition: the coexistence of hunger (insufficient caloric intake to meet dietary energy requirements), undernutrition (prolonged inadequate intake of macro- and micro-nutrients), and overnutrition in the form of overweight and obesity (IFPRI, 2017: 13). These trends are occurring within the same urban populations, with the health effects of malnourishment and obesity sometimes experienced in the same household or by the same individual (Ruel et al., 2017). While this trend has been observed widely, there has been insufficient attention paid to the process of "nutrition transition" in African secondary cities.

The problem of food insecurity in urban areas is under-researched and has received little political attention in Cameroon despite the fact that it is an urbanizing country. Many urban residents struggle to make ends meet. Unemployment is common, food prices are high relative to incomes, and, with population growth, it is increasingly difficult to survive by producing one's own food (Fon, 2011; Sneyd, 2013; Legwegoh and Fraser, 2017; Krishna Bahadur et al., 2018). This report marks the first step in AFSUN's goal of expanding knowledge on household food insecurity in Cameroonian cities. It contributes to an understanding of poverty in Dschang in terms of what people are eating, how they get their food, and the difficulties households face in accessing basic necessities such as water and electricity. The focus on food as an urban issue brings a new perspective to discussions on food security in Cameroon. While the Central African country is rich in agriculture, food insecurity persists and solutions are usually sought through rural development and agricultural innovation (Achancho, 2013). Poverty is widespread in both urban and rural areas (World Bank, 2020a). While this report focuses on Dschang, its findings and recommendations can be applied nationally as well as locally. The study aims to help the government improve its food security policies, food system governance, and urban planning. The focus on food as an urban problem evokes not only the development challenges posed by urbanization but brings a new perspective to discussions on food security in Central Africa, particularly in Cameroon.

2. Background to Dschang

Dschang is one among many urbanizing communities in Cameroon. The population of Cameroon in 2019 was 25.9 million, following an average annual growth rate of 2.8% since 1970 (World Bank, 2020b). Population growth has been accompanied by an increase in the proportion of Cameroonians living in urban areas: the percentage of the population living in urban areas has increased from 46% in 2000 to 57% in 2020 and it is projected to be 68% in 2040 (Figure 1). About one in every three urban Cameroonians lives in the two major cities: Yaoundé (the capital) and Douala (the economic capital and major port city). Other smaller urban areas like Dschang serve as regional administrative and economic centres across Cameroon's 10 diverse regions. While research on urban social issues in Cameroon has largely focused on Yaoundé and Douala, secondary cities like Dschang merit special attention given their rapid change and lack of local–level social welfare data.

FIGURE 1: Urbanization in Cameroon
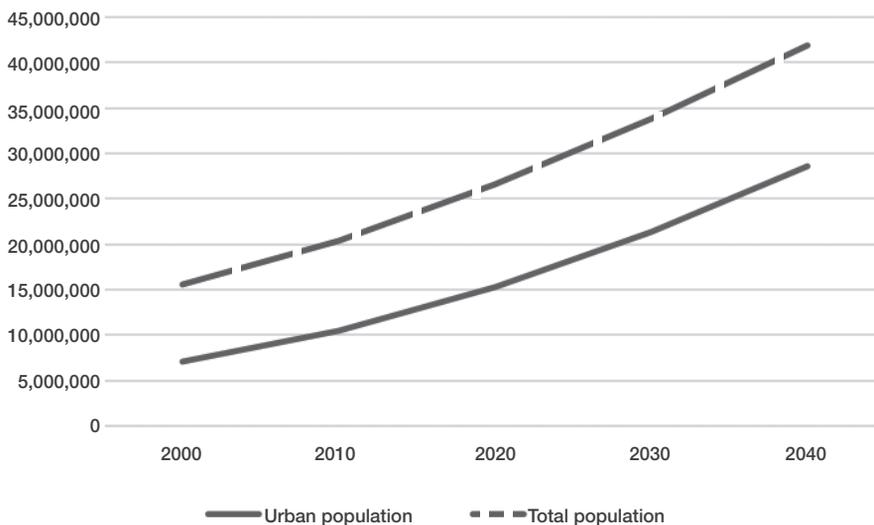
Source: World Bank 2020b

Dschang has a particularly dynamic demography as its growth is mainly due to the presence of the University of Dschang, which was established in 1994 and enrols thousands of new graduate and undergraduate students annually. The University of Dschang is part of the national system of tertiary education and as such many civil servants are posted to Dschang from other parts of the country, contributing to a highly mobile and nationally connected population. The third General Census of Population and

Housing in 2005 (the most up to date source of local population figures) lists the Dschang municipality's total population at 120,207 (Government of Cameroon, 2005). Extrapolating based on the rate of increase of Cameroon's urban population used in the World Bank (2020b) calculations, the 2020 population is about 200,000 and in 2040 the population will be close to 400,000.

Dschang's written historical record begins with a visit in 1895 by a German government representative called Eugen Zintgraff (UCCC, 2020). It became an administrative and civil city in 1903 and, after the first world war, came under French control after Cameroon was split between the British and the French. Dschang became the capital of the Bamiléké region in 1920 but at independence in 1960 was replaced as regional capital by Bafoussam. The administrative census of 1956 listed Dschang as having a population of 3,000 people. While under colonial rule, Dschang played an important role in the provision of commercial, educational, and administrative facilities to the adjacent rural areas of Fongo-Ndeng, Fotetsa, Fossong-Wentcheng, and Fontem. Dschang is now the administrative centre of the Menoua Division in the West region (Figure 2).

Agriculture is the main economic activity in Dschang and is practiced in both rural and peri-urban areas of the municipality. Rural agriculture involves more than 70% of the municipality's working population (UCCC, 2020). Production systems are still largely hand made and crops are mixed. In the same field, one can find both food and perennial crops, including Arabica coffee, plantains, beans, maize, cassava, cocoyams and taro. The growing of food crops – mostly vegetables like tomatoes and cabbage – is increasing in peri-urban wetland areas along streams and in valleys. Production of off-season corn has also increased.

FIGURE 2: Location of the City of Dschang
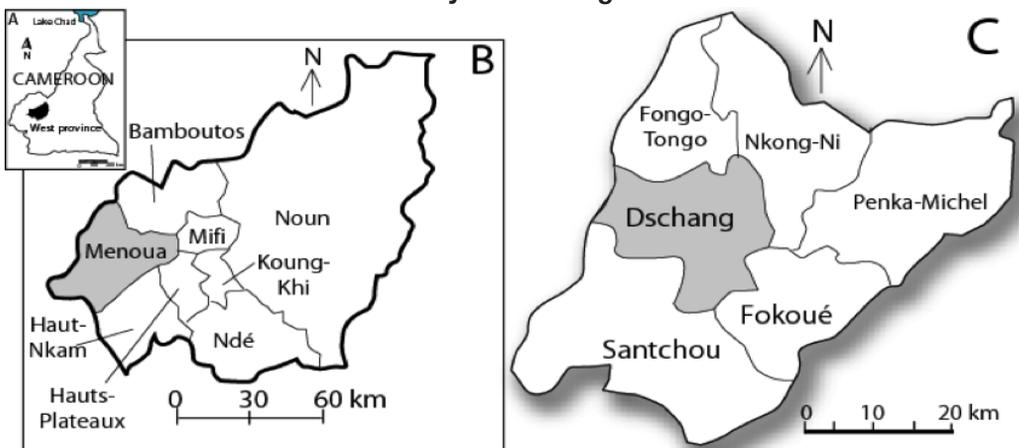
Source: CEREHT 2010

Certain contextual factors in Dschang present challenges in the collation of secondary data and the interpretation of primary data:

1. Dschang is close to the border between Cameroon's Anglophone and Francophone regions and is therefore affected by the civil war and nearby military violence. There are an estimated 679,000 internally displaced people (IDP) as of January 2020 (ACAPS, 2020). While the exact number in Dschang is not known, anecdotal evidence during the survey implementation in December 2017 suggested that there were many displaced people. A large share of the displaced people were from the neighbouring Lebialem division, which shares a lot of cultural similarities with Dschang and there had always been mobility between the two areas prior to the current political instability. Many of these people are absorbed by local households, for example when children are sent from conflict areas to attend school in a peaceful area and stay with relatives. The presence of IDPs likely contributed to the high level of household food insecurity in Dschang by stretching the resources of local households hosting guests and by the introduction of vulnerable displaced households.

2. Cameroon's political tensions have reduced the quality of population data collected by the government, with one analyst noting that the five year delay in releasing the 2005 census data "did not speak of a state interested in producing statistical data about its population" (Munoz, 2018: 10). Claims that the minority Anglophone population was underestimated in order to divert resources from these regions heightened tensions and skepticism about the veracity of the data (VOA, 2009). Most population figures are based on projections and municipal scale figures are not available. There is little way of knowing the characteristics of the local population, for example in terms of Anglophone or Francophone residents.

3. Similar to the lack of statistical data is the lack of secondary literature pertaining to Dschang. There are few studies focused on urban issues and none on food security in Dschang. This means that certain surprising findings, for example with regards to the self-identification of households without "heads," cannot be adequately explained with the survey data on its own. This report is therefore pioneering and in many ways serves to open up more questions for further investigation than resolve questions.

4. A final point in need of highlighting is the geography of the municipality itself. The urban core is very small and it is surrounded by densely populated peri-urban settlements. Beyond the most proximate peri-urban villages and the main tarmac road connecting the city to Douala in the south and Baffoussam in the east, about half the population of the municipality lives in rural areas that are not easy to

access. The poor state of local roads means that some rural and peri-urban areas within the municipality take hours to reach by a combination of motorcycles and by walking. Geographical categories such as "urban" and "rural" agriculture are rarely clear within this context.

Some of these points are reflections of the broader picture of secondary urbanization in Africa (i.e. a lack of clear "urban/rural" distinctions and a lack of secondary data). Other points are deeply embedded in the political economy of Cameroon (i.e. the politicization of the census, poor state of transportation infrastructure, administration of the tertiary education sector, and effects of the civil war). While these challenges have limited the scope of the analysis in this report, they also represent opportunities for future research. The case study of food security in Dschang shows that there is much left to explore in the broader mission of AFSUN.

3. Methodology

The data presented in this report was gathered through a door-to-door survey of 964 households conducted in December 2017 across the municipality of Dschang. The survey instrument was based on a survey of food security in urban households developed by AFSUN and adapted by the Hungry Cities Partnership. It was used in the same year for this project in Malawi (Riley et al., 2018) and Namibia (Nickanor et al., 2019).

The survey instrument covered experiences of food insecurity using measurement tools developed by the Food and Nutrition Technical Assistance Project (FANTA) (Coates et al., 2007; Swindale and Bilinsky, 2007); access to basic goods and services; food sources; and livelihood-sustaining activities. The survey included questions on household members (defined as people eating from the same pot and sleeping in the same dwelling for at least six months of the year on average). Researchers administered the survey in French, the predominant language in Dschang, and in Yemba, the most common mother tongue in the area. Both versions of the survey were administered using tablets programmed with the Open Data Kit application. The data was uploaded daily to the server on www.kobotool-box.org and reviewed in real time so that errors could be addressed with enumerators during the implementation period.

The absence of a detailed household-level sampling frame, including no up-to-date census information and no house numbers or street names in informal settlements, meant that a sampling method had to be designed to capture as broad a representation of the population as possible. The super-

visors developed a plan based on their knowledge of the communities within Dschang municipality, using a paper map as a guide. Every day, researchers were assigned to specific areas to achieve a broad coverage. Because surrounding rural and peri–urban areas are within the municipal boundaries, they were included so that the sample could reflect the char-acter of the entire population governed by the urban municipal council. Enumerators fluent in the local language were assigned to the areas out-side the urban core. Several starting points were selected at random in each area and teams of two researchers from the University of Dschang were charged with covering each household along their sampling routes. The researchers were paired based on their knowledge of different areas and, where necessary, on their language fluency.

For each household, researchers interviewed an adult member with ade-quate knowledge of income, expenditure and food purchasing practices in the household. The approximate GPS coordinates of each interview were reviewed daily, which allowed the field supervisors to adjust the sampling strategy based on the coverage seen on maps produced every day. The tablets also facilitated daily review of the data and follow–up conversations with researchers. These activities improved the sample coverage and the data quality. The fieldwork was completed in 14 days. Figure 3 shows the spatial distribution of sampled households.

FIGURE 3: Spatial Distribution of Households Surveyed
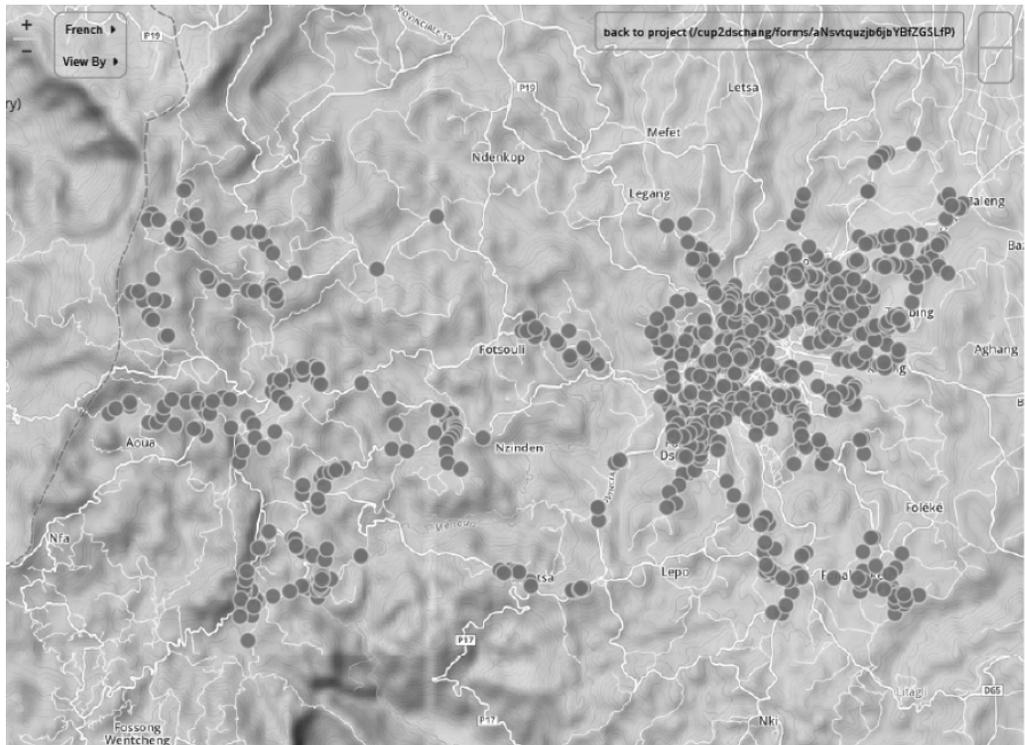
4. HOUSEHOLD CHARACTERISTICS

4.1 Household Size

The average household size was 4.5 people. Just over one in every four households (28%) had only one or two members (Figure 4). The relatively high proportion of small households can be explained by the fact that students at the university often form their own households. The greatest share of households (16%) had five members. Five percent of households were very large, with more than 10 members, and the largest had 19 members. The average household size in Cameroon is 5.2, with 35% having 1-3 members, 24% having 4-5 members, and 41% having 6 or more members (UN, 2017, based on 2005 census data).

FIGURE 4: Distribution of Household Size
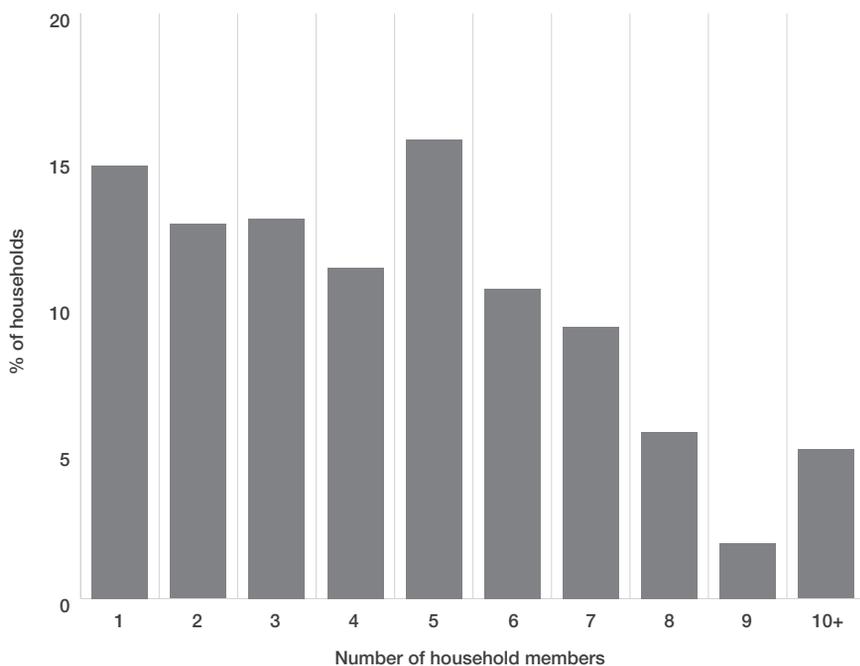
4.2 Age of Household Members

National studies conducted in Cameroon in 2014 showed that 50% of the population was under the age of 18 and nearly two-thirds (64%) were under 25, reflecting the extreme youth of the Cameroonian population (Government of Cameroon, 2015). The age pyramid for the members of households surveyed in Dschang (Figure 5) is similar to the national

picture. The Dschang survey found that one-quarter of all household members were younger than 10 years old and 70% were younger than 30. The youthfulness of the population of Dschang shows that the fertility rate remains high and is also partly attributable to the decrease in infant mortality. The mortality rate for children under 5 years in Cameroon fell from 137.1 deaths per 1,000 in 1990 to 76.1 deaths per 1,000 in 2018 (World Bank, 2020b).

FIGURE 5: Age of Household Members
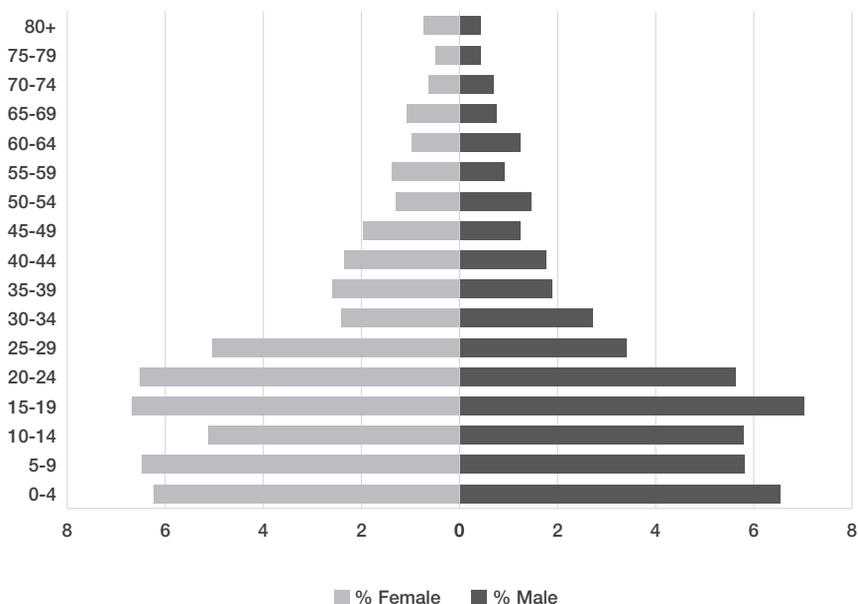
About one in every 10 household heads was under the age of 25 and nearly one in four (24%) were in the 25–34 age range (Figure 6). More than half of the household heads were under the age of 45. Nearly one in every three (30%) households in the survey did not name a member as the "head", suggesting a different type of household organization than in other cities surveyed by AFSUN, which are primarily in Southern Africa. There was no discernable pattern that could lead to a statistically meaningful explanation of what characteristics were associated with households not having heads. Households without heads could be students who do not consider themselves established yet or stable enough to have a hierarchical structure; they could be young people choosing to identify themselves less hierarchically, or they could be parts of households stationed in Dschang by the national civil service without their culturally identified "head" present. Notably, the identification of household member relationships was at the discretion of the respondent, whereas the household structure (below) was identified by the enumerator.

FIGURE 6: Age of Household Heads
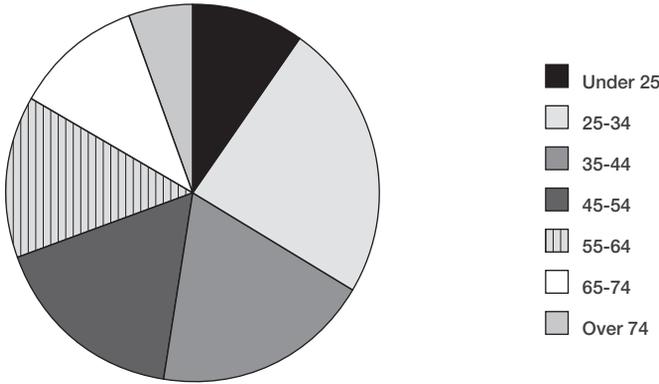
4.3 Migration

Nearly three-quarters of household members were born in Dschang (73%) and most of those born outside the city were from another urban area in Cameroon (23%) (Figure 7). Only 4% were born in a rural area in Cameroon and just 0.2% were born outside the country. At the household level, 20% were first-generation migrant households (that is, every member was born outside the city), while 46% had no migrant members and 34% comprised a mix of migrants and non-migrants. Mixed households usually consist of adult migrants and children born in the city (Figure 7). The high proportion of migrants born in other urban areas in Cameroon is consistent with the importance of the university within the local economy and the centralized staffing system that stations new hires, often from urban centres, to smaller centres such as Dschang.

FIGURE 7: Birthplace of Household Members
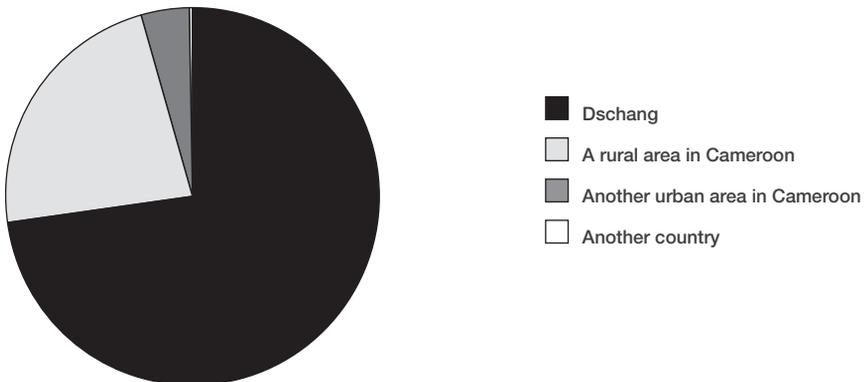
An analysis of birthplace by cohort shows an alignment between age and likelihood of being born in Dschang (Figure 8). Nearly 90% of those under 14 were born in Dschang compared with around 60% in the 15–44 age range. This alignment suggests that natural population growth is the biggest contributor to the growth of the city. The segment of the population least likely to be born in Dschang – those aged 15-29 – coincides with the age of most university students. More than one in every five (22%) migrants came to Dschang in the two years prior to the survey, probably a mix of students, civil servants, and displaced people from the neighbouring Anglophone region.

FIGURE 8: Birthplace by Age Cohort
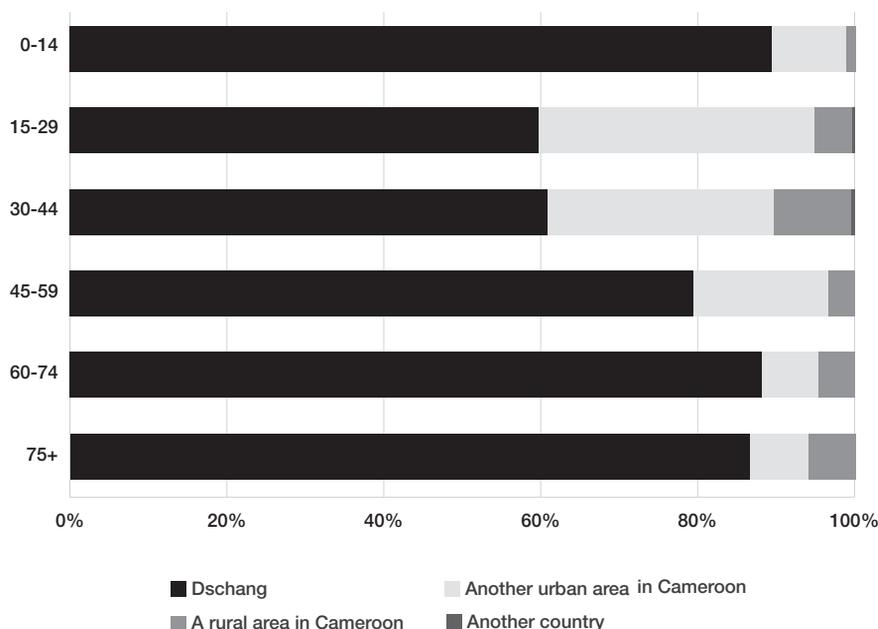
Of the 27% of household members who had migrated to Dschang, only 12% had come before 2000 (Figure 9). Most were more recent migrants with 66% moving between 2010 and 2016. Those who came to Dschang in 2016 and 2017 had the following characteristics: 51% were students and only 11% were unemployed/looking for work, 28% had some university education or an undergraduate degree, and 15% had some postgraduate training or a postgraduate degree. The mean and median ages of the recent migrants were 20.2 and 20 respectively.

FIGURE 9: Year of Migration to Dschang

- Before 2000
- 2000-2010
- 2010-2015
- 2016-2017
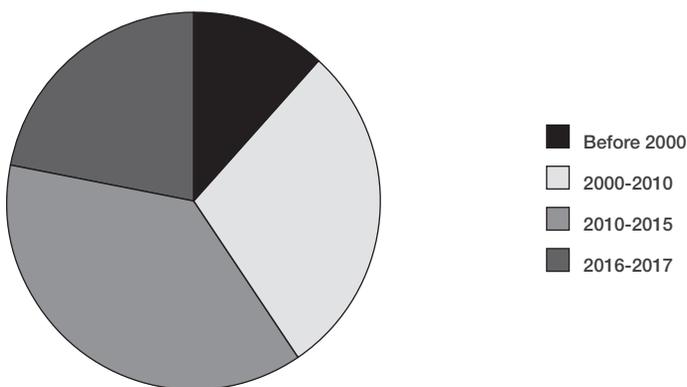
4.4 Education Levels

Figure 10 shows the level of education of surveyed household members grouped according to age and gender. The cohort with the highest percentage with no formal schooling were women over 60 years old (52%), far higher than men in the same age group (17%). Among those aged 41-60, far more men than women had completed high school (34% versus 17%) and university (14% versus 3%). In the 26-40 age range, however, the rate of high school completion is similar for men and women but men are advantaged in terms of tertiary education. In the 19-25 age range, women have a slightly higher rate of tertiary education than men, suggesting a move towards gender equity in access to post–secondary education, which is also evident in the younger cohorts.

4.5 Household Composition

The enumerators categorized each household to one of five household types differentiated by the relationship of the members with one another and by gender (Frayne et al., 2010; Riley et al., 2018). The types are comparable to survey findings from other AFSUN and HCP surveys, with the caveat that the precise definition of the "head" varies by context (Riley and Caesar, 2018; Riley and Dodson, 2019). Its significance in Dschang requires further research. Female-centred households and male-centred households does not include a married or cohabitating couple but it can have any combination of children and other members. They are distinguishable from each other by the gender of the household head (*de facto* or self-identified). Nuclear and extended households include a married or cohabitating couple. The distinguishing feature between the two is that the nuclear household only includes children as additional members, while extended households include other family and non-family mem-

bers. The fifth type is a single person living alone. Nuclear households were the most common type in Dschang (46%), followed by female-centred households (19%) and households with one person (13%) (Figure 11). Extended households (10%) and male–centred households (7%) were less common.

FIGURE 10: Level of Education of Household Members by Sex and Age

Legend:
- Post-graduate
- University completed
- Some university
- Post secondary qualifications not university (diploma or degree from technikon or college
- High school completed
- Some high school
- Primary completed
- Some primary school
- No formal schooling
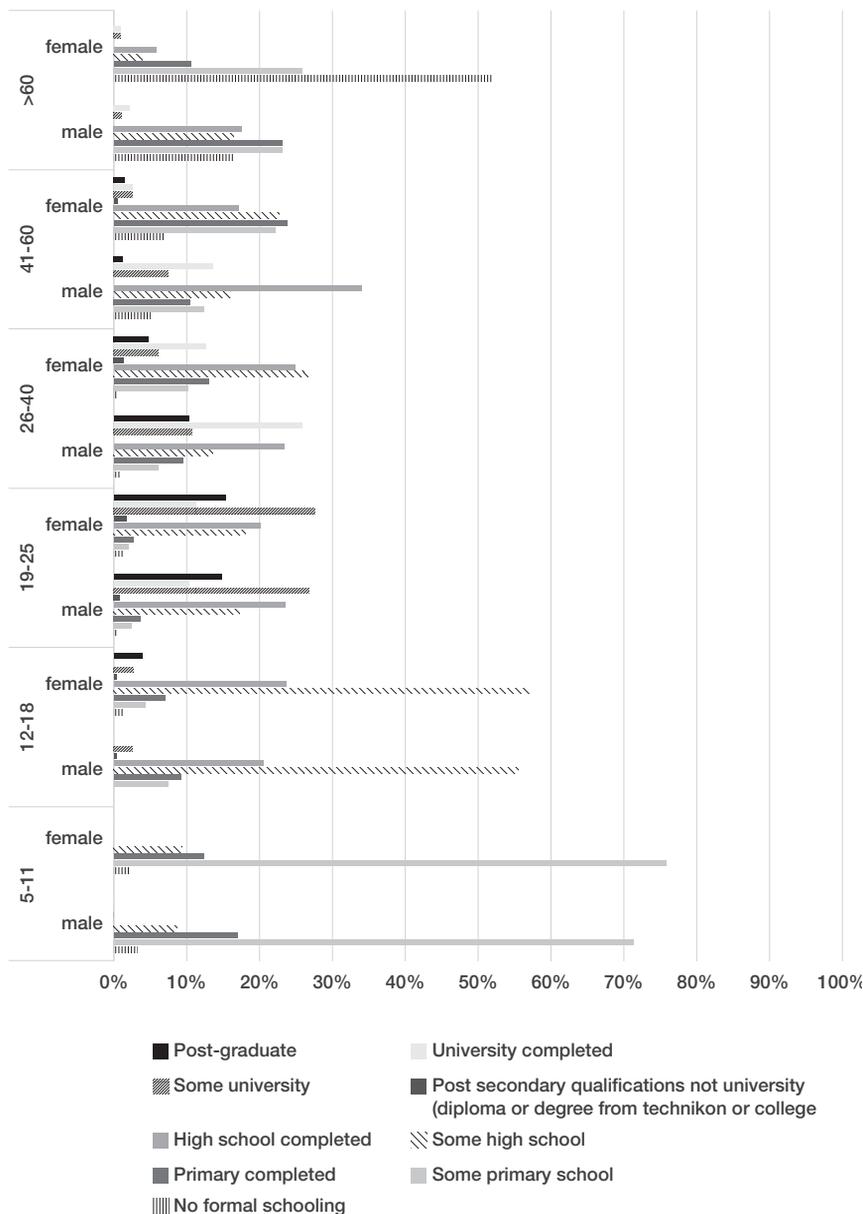
FIGURE 11: Household Composition

Female centred
Male centred
Nuclear
Extended
Single person
Other
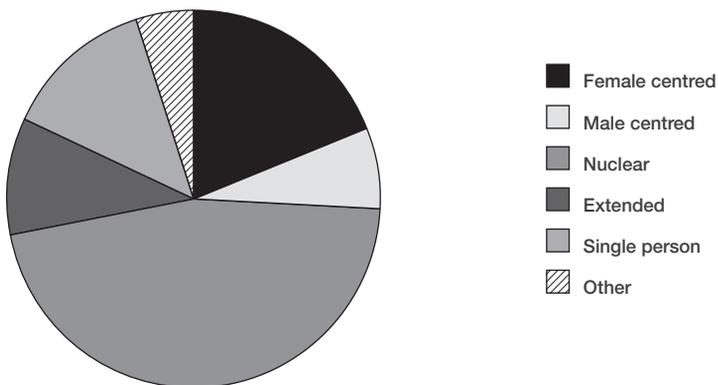
5. POVERTY AND LIVELIHOODS

5.1 Work Status

Among the adult household members (aged 18 or older), the most common work status was self-employed (42%), followed by student (23%), full-time worker (10%), and "unemployed and looking for work" (8%). Homemakers comprise only 6% of adults in the households surveyed (Figure 12). The low percentage of adult household members working full time reflects the high levels of unemployment and economic insecurity for most households in Dschang. The relatively high percentage of adults who are students shows the dominance of the university in the municipality.

FIGURE 12: Employment Status of Adult Household Members

Self-employed
Working full-time
Working part-time/casual/contract/seasonal
Unemployed and looking for work
Unemployed and not looking for work
Housewife
Pensioner
Medically unfit, disabled, etc.
Student/scholar/child
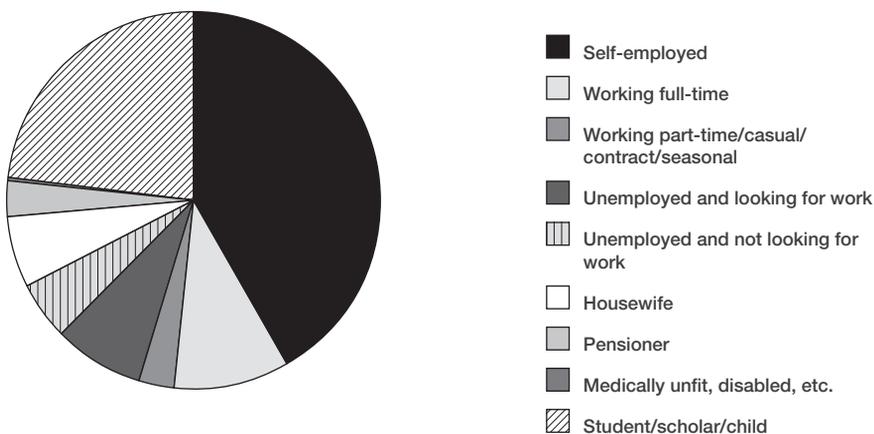
5.2 Household Income

Figure 13 shows the proportion of households receiving income from various sources in the month prior to the survey. The most common source of income (29% of households) was the production and sale of fresh produce, followed by informal labour (28%), formal labour (19%), and remittances in the form of regular financial support from friends or family members (18%). Fewer than 2% of households had income from personal investments, formal loans (banks), informal loans (lenders), monetary gifts, renting of property, and non-government formal grants or aid. The importance of informal income sources is stark in that only 15% of households had income exclusively from formal wage work and/or formal businesses.

FIGURE 13: Household Income Sources
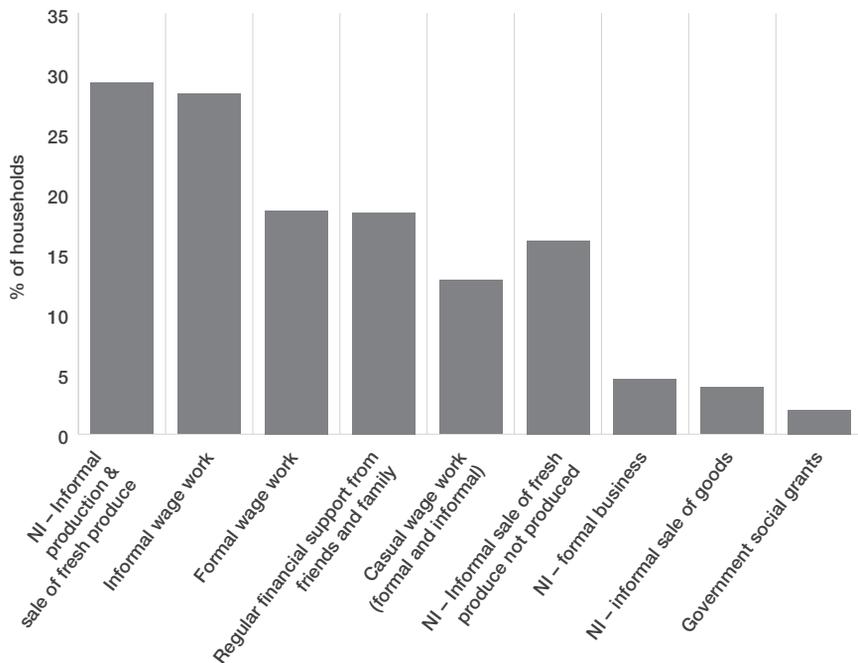
Note: Multiple-response question
NI = Net Income

Household income data is based on a sub-sample of the survey population since only about one in every four respondents were willing to share their household income information. Even with this limitation, the data provides a window into the economic reality of households in Dschang. The average income received in the previous month by reporting households was FCFA84,123.19 (USD151.42)[1] with a median income of FCFA50,000 (USD90) (Table 1). The difference between the average

and median suggests that the typical income is well below average. Combined with a standard deviation of 102,627.44, there is clearly large variation in income levels. The variability of incomes is evident in the distribution of income quintiles, with the lowest quintile below FCFA15,000 (USD27), while the threshold for the highest quintile was nine times higher at FCFA135,001 (USD243). Furthermore, all three of the lowest income quintiles were below the overall average income. By way of comparison with the other two study sites, the mean and median incomes in Mzuzu, Malawi, were USD131 and USD42 respectively, and USD532 and USD223 in Oshakati-Ongwediva-Ondangwa in Namibia. These also reflect a high degree of inequality and generally low income levels by international standards.

TABLE 1: Income Quintiles		
Quintiles	FCFA	USD
1	<=15,000.00	<=27.24
2	15,001.00–34,000.00	27.24–61.74
3	34,001.00–64,000.00	61.74–116.23
4	64,001.00–135,000.00	61.75–245.17
5	135,001.00+	245.17+
Mean	84,123.19	152.32
Median	50,000.00	90.80
Standard deviation	102,627.44	

The amount of revenue generated from each source provides additional insights into income levels in Dschang (Table 2). The mean income earned through the most common source (informal production and sale of fresh produce) was FCFA47,916.67 (USD86.25). The mean income from informally reselling fresh produce not produced by the household was FCFA85,500 (USD155.28). The mean income from informal sector wage work was FCFA70,502.26 (USD126.90) while formal sector wage work was more than double at FCFA162,185.32 (USD291.93). The informal sale of fresh produce purchased by the seller is more lucrative than either producing food for sale or being employed in the informal sector. This finding is a reflection of the vibrant traditional informal food trading sector dominated by "buyam-sellams" (a pidgin expression used to refer to women who buy from rural producers and resell the produce in urban markets) (Fojong, 2004).
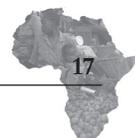
TABLE 2: Mean Monthly Income by Source				
Income source	No. of house-holds	Mean (FCFA)	Mean (USD)	Standard deviation (FCFA)
Informal business (production and sale of fresh produce)	48	47,916.67	86.25	63,683.42
Informal wage work	42	70,502.26	126.90	84,111.06
Formal wage work	47	162,185.32	291.93	118,211.83
Remittances (regular financial support from friends or family)	90	34,716.67	62.49	37,576.29
Casual wage work (formal or informal)	27	46,855.85	84.34	59,199.31
Informal business (sale of fresh produce not produced by this household)	10	85,500.00	153.90	91,695.45

5.3 Household Expenses

Expenditure on food and groceries was incurred by the greatest number of households in the month prior to the survey (77% of all households) (Figure 14). Although high, this is a smaller proportion than in the other secondary cities in the study (94% in Mzuzu and 99% in the Oshakati-Ongwediva-Ondangwa corridor) (Nickanor et al., 2019; Riley et al., 2018), suggesting a higher proportion of households living off what they grow. The second most common expenditure was telecommunications (67% of households), followed by transportation (55%), medical care (50%), and education (42%). The following expenses were incurred by fewer than 5% of households: informal utilities; entertainment; furniture, tools and appliances; and insurance.

The average amount spent on food and groceries by households in the previous month was FCFA24,746.52 (USD44.54). Public utilities (FCFA3,852.05 or USD6.93) and telecommunications (FCFA4,133.96 or USD7.44) were the lowest monthly costs. The highest monthly expense was for education (FCFA47,790.57 or USD86.02), followed by unspecified debt repayments (FCFA42,068.63 or USD75.72).

FIGURE 14: Monthly Household Expenses

TABLE 3: Monthly Household Expenditure
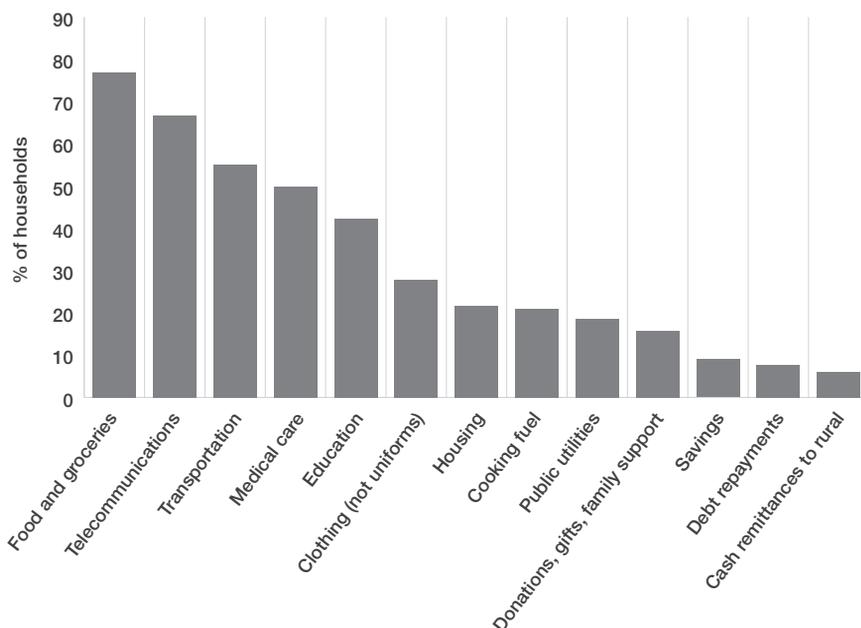
Type of expense	No. of households	Mean (FCFA)	Mean (USD)	Standard deviation (FCFA)
Food and groceries	376	24,746.52	44.54	22,953.72
Telecommunications	402	4,133.96	7.44	4,020.83
Transportation	313	8,106.53	14.59	9,541.70
Medical care	272	33,334.74	60.00	81,084.19
Education	265	47,790.57	86.02	86,855.71
Clothing (excluding uniforms)	129	13,395.35	24.11	16,950.14
Housing	142	16,645.77	29.96	13,378.42
Cooking fuel	139	6,551.44	11.79	6,044.13
Public utilities	146	3,852.05	6.93	4,264.90
Donations, gifts, family support	84	18,216.07	32.79	39,342.06
Savings	30	31,433.33	56.58	47,065.75
Debt repayment	51	42,068.63	75.72	42,052.23
Cash remittances	32	21,343.75	38.42	18,138.55

The relationship between the average monthly food expense and average monthly household income for each income quintile is shown in Figure 15. The unaffordability of food is most pronounced in the lowest income quintile, where the average monthly food expenditure is 160% of average income. For the second income quintile, it is more than half (55%) and from there the ratio falls for each quintile to a low of 23% for the highest

income group. The finding that many of the households with the lowest incomes spend more on food alone than they receive as income was also found in Mzuzu, where it applied to the two poorest income quintile groups (Riley et al., 2018). It is illustrative of the inadequacy of many households' incomes for basic survival and to some extent reflective of the lack of household level accounting for households living hand-to-mouth.

FIGURE 15: Food Expenditure and Mean Income by Quintile
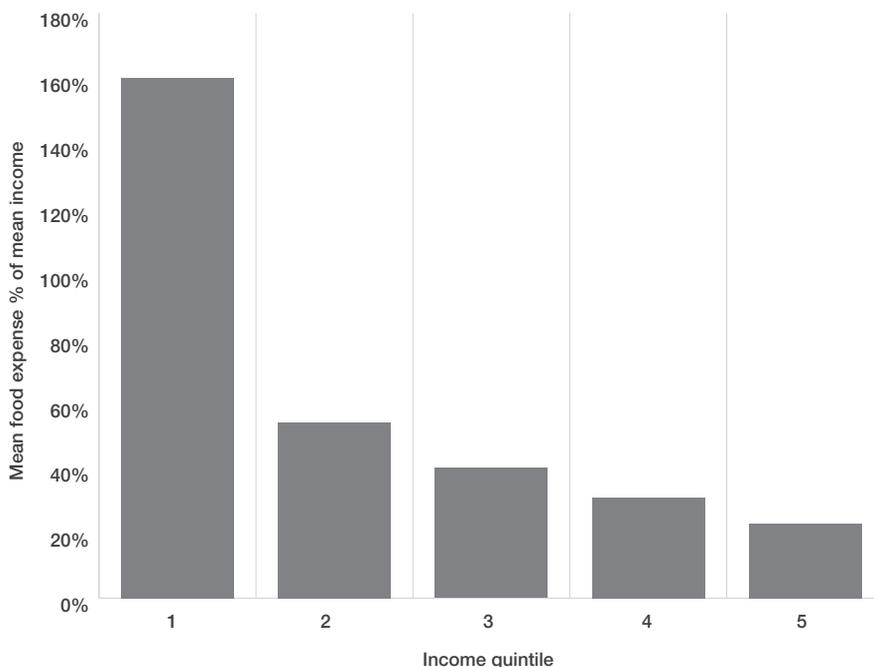
5.4 Types of Housing

This study uses the definitions of different types of housing in secondary African cities developed by Riley et al. (2018):

- *House* refers to a typical house in the local context, which means that the kitchen and bathroom are outdoors.
- *Townhouse* refers to a higher quality house where the kitchen and bathroom are inside.
- *Traditional house* is built with locally made bricks and has a grass thatched roof.
- *Shack in an informal settlement* means a housing structure that is less permanent than a traditional house and built with materials such as timber, plastic bags, and plastic sheets.
- *Cabin in the yard adjacent to the house.*

- *Other* includes a range of options, such as apartments, hotels, and mobile homes.

The most common housing category in the sample was house (56%), followed by traditional house (13%) and townhouse (13%). Less than 10% lived in other types of homes such as an apartment, hostel or dormitory, or a room in a house or apartment (Figure 16). These results indicate that the vast majority of households in Dschang do not have inside taps with running water.

FIGURE 16: Types of Housing

House
Townhouse
Apartment
Traditional dwelling
Hostel or dormitory
Backyard shack
Room in house
Room in flat
Shack in informal settlement
Other
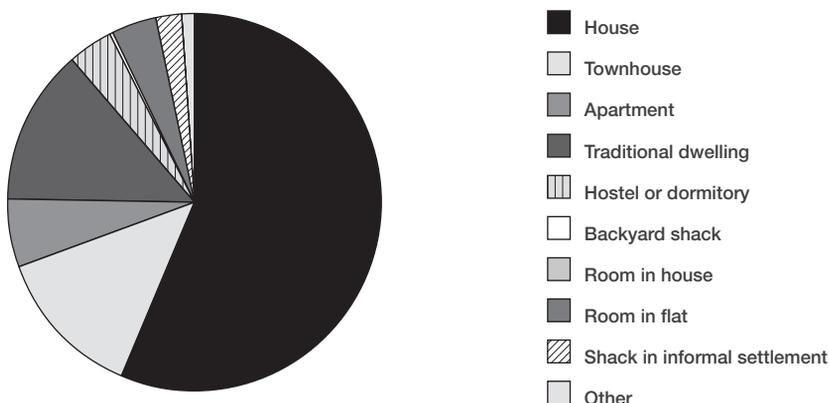
5.5 Lived Poverty Index (LPI)

Non-monetary approaches to understanding the nature and extent of poverty based on an analysis of lived experience complement the income data presented above. The Lived Poverty Index (LPI) is a well-used indicator that measures the degree of poverty in a household, which can then be aggregated for a city's population and different segments of the population. The LPI measures the frequency with which people went without certain basic needs (never, one, twice, many times or always) in the previous 12 months (Afrobarometer, 2004). The basic needs measured are: food, drinking water, medicine and medical treatment, electricity, cooking fuel, and cash income. The LPI score is calculated for each household on a scale of zero to four, with zero being the least poor (who have never experienced a lack of access to all the necessities) and four being the poorest (who have always lacked access to all the necessities).

The mean LPI score for Dschang was 1.39 and the median 1.33. Fewer than half of households (38%) had scores below 1 (including 6% who had never experienced deprivation). A similar percentage (42%) had scores ranging from 1.01-2.00, and about one household in every five (21%)

had scores above 2.00 (Figure 17). The mean LPI score for Oshakati-Ongwadiva-Ondangwa was 0.9 (Nickanor et al., 2019) and for Mzuzu was 0.9 (Riley et al., 2018), suggesting relatively high levels of poverty in Dschang.

FIGURE 17: Lived Poverty Index Scores

Legend:
- <= 1.00
- 1.01-2.00
- 2.01-3.00
- 3.01+
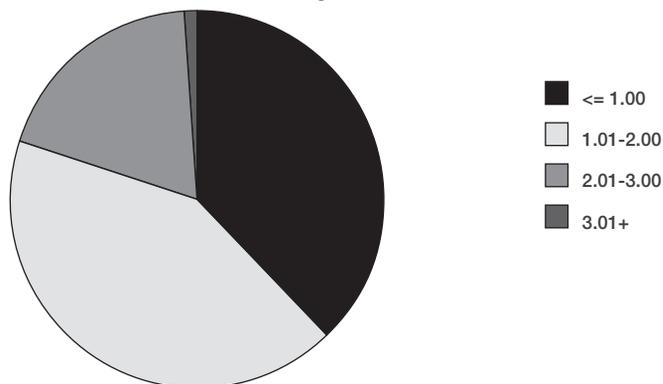
More than half of the respondents reported facing shortages of electricity (87%), food (59%), cash (57%), and clean water (56%) at least once during the previous year, and just under half were not able to access medicine and medical services or cooking fuel (Figure 18). The intensity of deprivation is noteworthy: households faced repeated shortages ("several times", "many times" or "always") of electricity (86%), clean water (53%), cash (40%), and food (38%).

FIGURE 18: Frequency of Deprivation of Basic Needs

Legend: Never | Just once or twice | Several times | Many times | Always
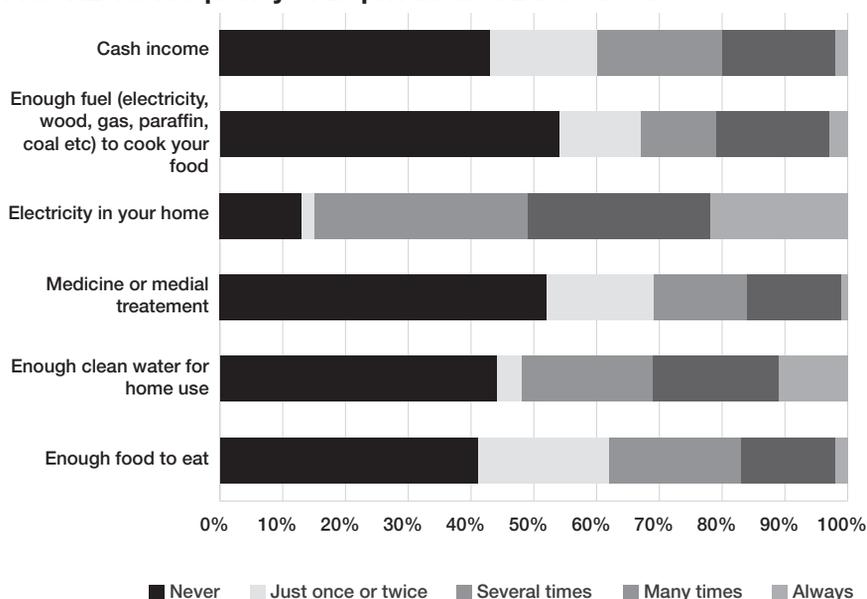
6. HOUSEHOLD FOOD INSECURITY

6.1 Household Food Insecurity Access Scale (HFIAS)

The Household Food Insecurity Access Scale (HFIAS) measures the degree of food insecurity in the four weeks preceding the survey using event frequency questions (Coates et al., 2007). The minimum possible score is 0, which means that the household has never experienced any of the indicators of food insecurity, and the maximum is 27, which means that all events were often experienced. The higher the score, the more the household experienced food insecurity. The average score in Dschang was 8 and the median was 7. The difference between the mean and median reflects the minority of households with very high scores that raised the average (28% had scores above 12) (Figure 19). Meanwhile, one-third of the households had very low scores of 3 or less and thus were rarely faced with food insecurity.

FIGURE 19: Distribution of HFIAS Scores
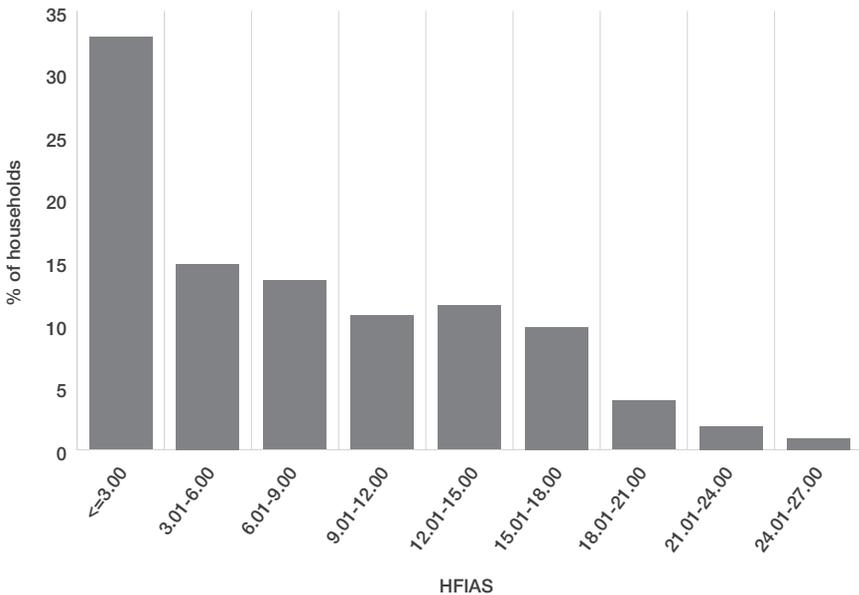
The Household Food Insecurity Access Prevalence (HFIAP) indicator takes account of the variability in experiences captured in the HFIAS score. This tool assigns each household to one of four levels of food insecurity: food secure, mildly food insecure, moderately food insecure, and severely food insecure (Coates et al., 2007). As many as 67% of Dschang

households were severely food insecure, while only 18% were completely food secure (Figure 20). The remaining households were mildly (4%) or moderately food insecure (11%).

FIGURE 20: Household Food Security Classification

- Food secure
- Mildly food insecure
- Moderately food insecure
- Severely food insecure
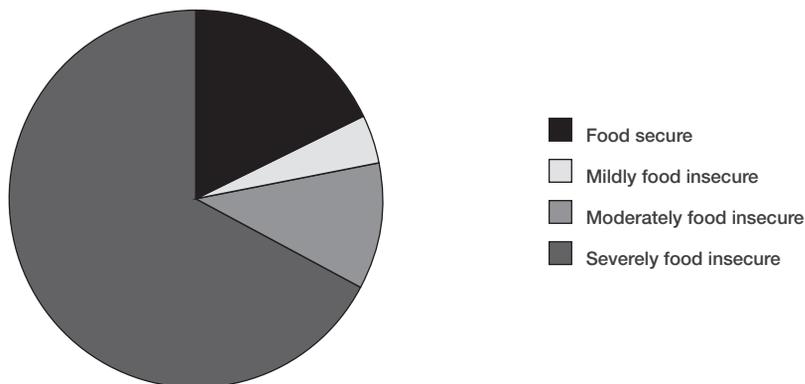
The answers to each of the nine HFIAS questions allow us to understand the types of events experienced by Dschang households. In the month preceding the survey, most households had not eaten preferred foods (61%), had eaten unwanted food (60%), had eaten a smaller meal than they needed (60%), had eaten fewer meals than normal (52%), and had eaten a limited variety of foods (60%) (Figure 21). As many as 60% had had no food to eat in the household at some point. Some of the more serious food insecurity events were experienced by many households. For example, 36% of households had a member who went to sleep at night hungry because there was not enough food and 30% had a member who spent a whole day and night without eating anything for a similar reason. Nearly half of all households had worried about not having enough food.

6.2 Household Dietary Diversity

The Household Dietary Diversity Score (HDDS) is designed to assess the quality and variety of food consumed and therefore helps capture the utilization aspect of food security. Respondents are asked whether any household member consumed any foods from 12 food groups in the previous 24 hours (Swindale and Bilinsky, 2006). The groups are grains; roots/tubers; fruits; vegetables; meat and poultry; eggs; fish and shellfish; nuts and legumes; milk and dairy products; foods made from oil and fat; sugar and sweets; and other foods, including spices, condiments, tea and coffee. The HDDS is determined by summing the number of food groups consumed and assigning each a value between 0 and 12.
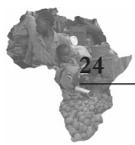
The average HDDS score in Dschang was 5.1 with a mode of 5 and median of 6. The minimum was 0 and the maximum 12. Figure 22 shows considerable variability in dietary diversity among households in Dschang.

FIGURE 21: Frequency of Experience of Food Insecurity Dimensions
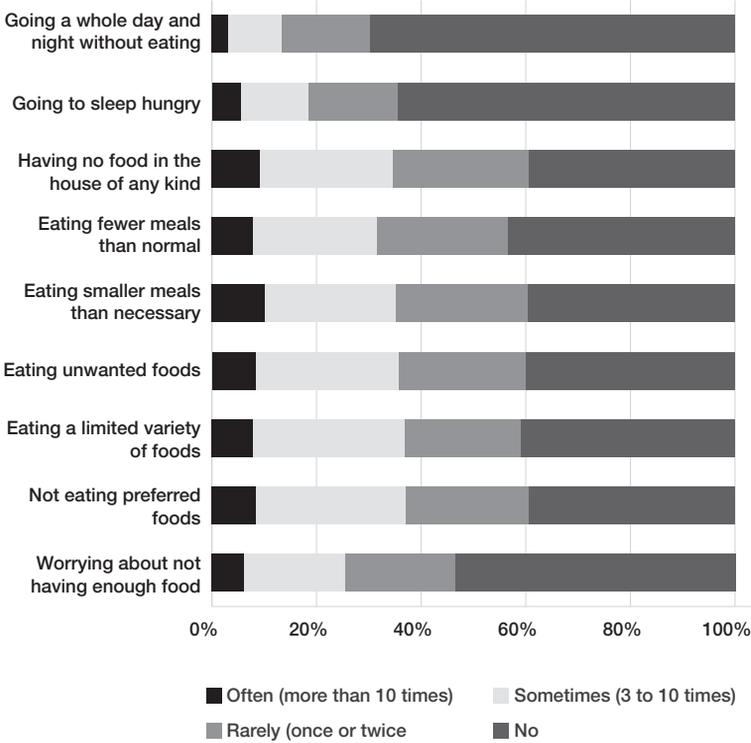
FIGURE 22: Household Dietary Diversity
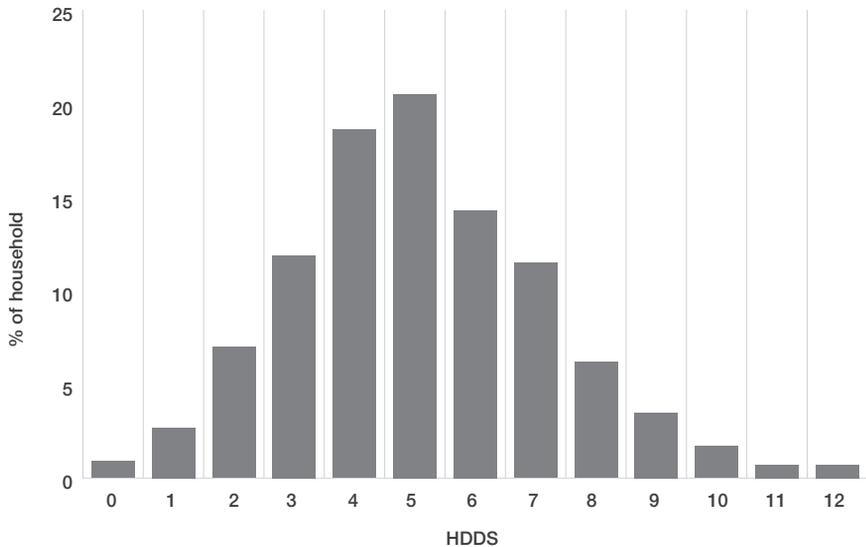
Higher household dietary diversity does not necessarily mean better nutrition if the foods eaten are less nutritious or are related to health problems, as is the case with sugar, which has been linked to obesity and diabetes (Legwegoh and Hovorka, 2016). Most households in Dschang had consumed foods made with oil, fat or butter (81%), fish or shellfish (61%), and grains (58%) (Figure 23). Milk and dairy products (22%), eggs (19%), and meat and poultry (18%) were the least widely consumed.

FIGURE 23: Consumption of Different Food Groups
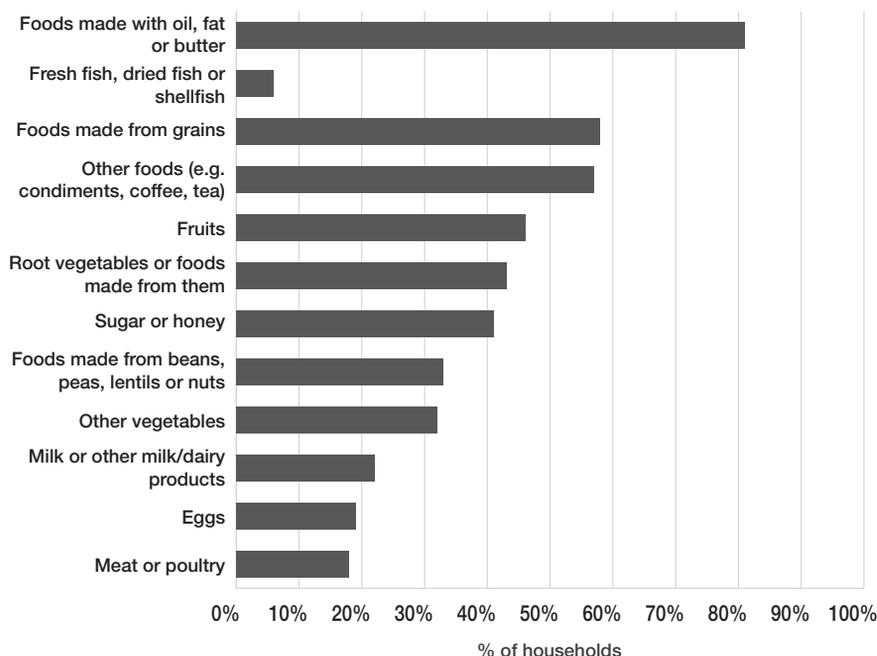
6.3 Adequacy of Food Provisioning

The Months of Adequate Household Food Provisioning (MAHFP) evaluation tool captures monthly access to food over the course of the previous year and identifies which months in the year households were most food insecure (Bilinsky and Swindale, 2007). The MAHFP score is calculated as the number of months out of 12 that the household had an adequate food supply. The average score for Dschang was 10.6 and the median was 11. The lowest score was 5 and 6% of households had a score below 9. Almost one-third (32%) had a score of 12 (Figure 24).

FIGURE 24: Distribution of MAHFP Scores
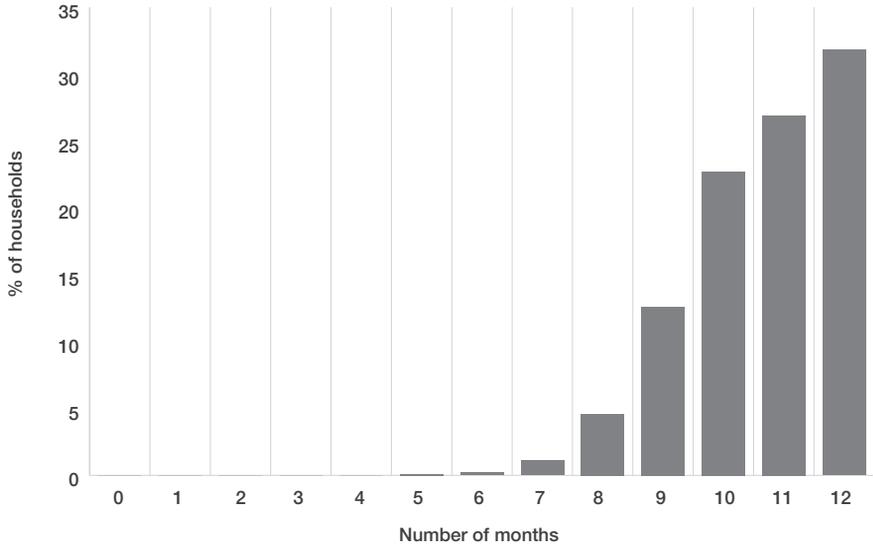
Figure 25 shows the months when the greatest number of households did not have an adequate food supply. March, April, May, December, and January were identified as the most difficult months. The largest share of households (37%) found April the hardest of all. The main reason for the rise in food inadequacy between March and May is that this is the preharvest season when most staple crops are being planted and food is scarce (Figure 26). At other times of the year, especially in January, the lack of cash to purchase food is the main reason for households having insufficient supplies.

FIGURE 25: Months During Which Households Did Not Have Adequate Food
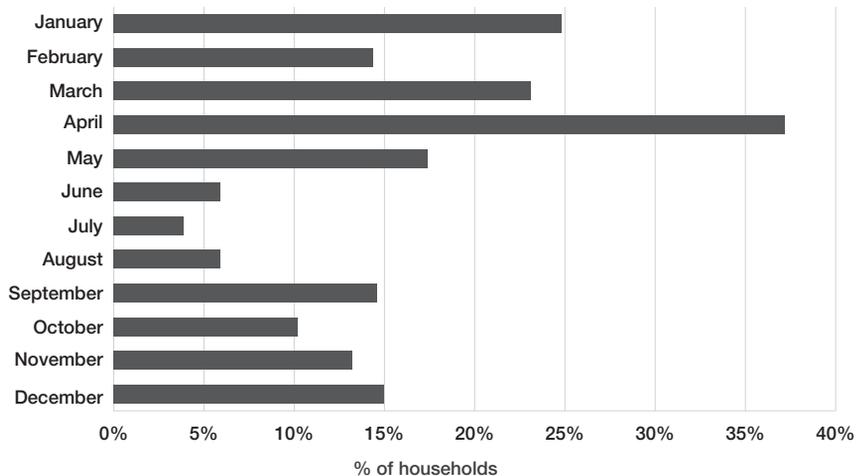
FIGURE 26: Main Reasons for Food Inadequacy by Month

FIGURE 27: Inaccessible Foods in April Due to Agricultural Cycle
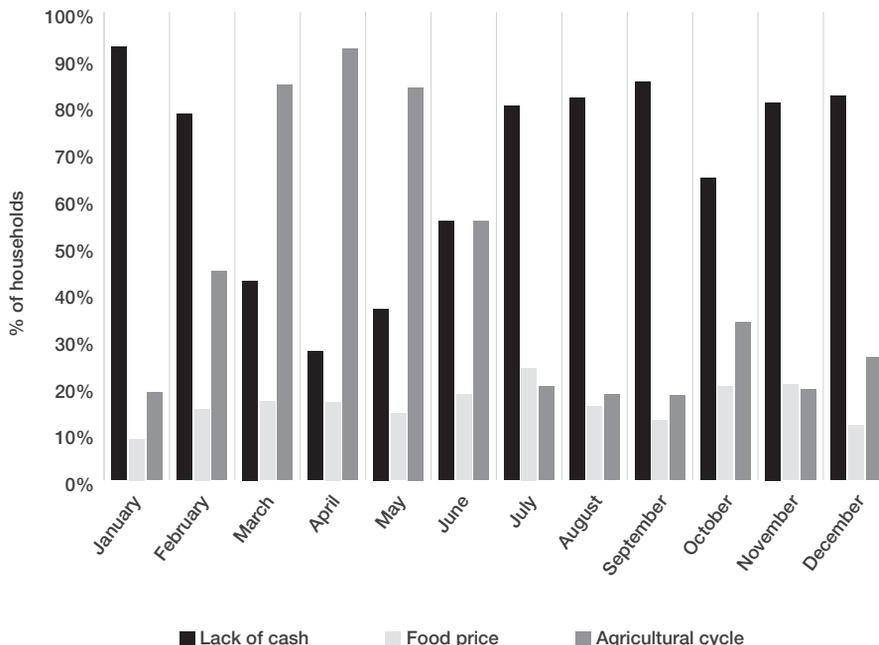
Figures 27 and 28 illustrate the types of foods made inaccessible by the agricultural cycle in April and in January by the lack of cash. In April, the most widely inaccessible foods were root vegetables and foods made from them. These as well as meat and poultry were also hard to obtain in January. Notably, in both months, sugar or honey, foods made with oil, fat or butter, and other foods were inaccessible to only a few households, suggesting that the least nutritious foods are the most likely to be available year-round.

FIGURE 27: Inaccessible Foods in April Due to Agricultural Cycle
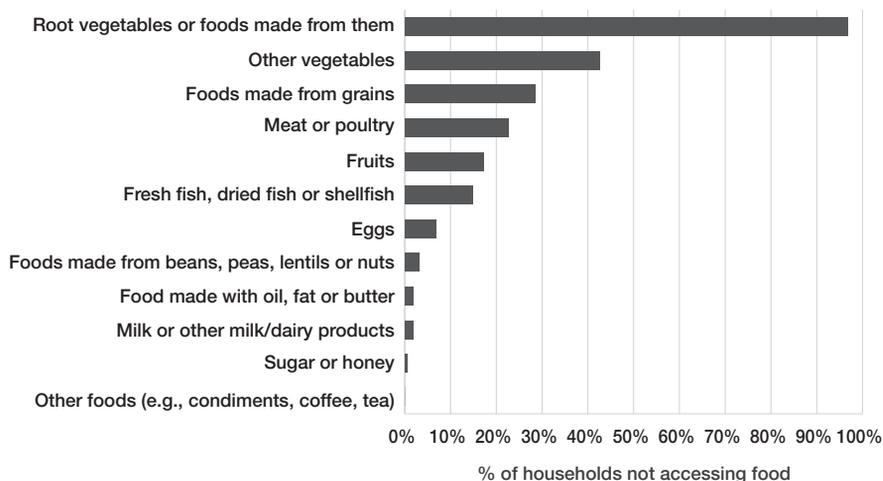
FIGURE 28: Inaccessible Foods in January Due to Lack of Cash

% of households not accessing food
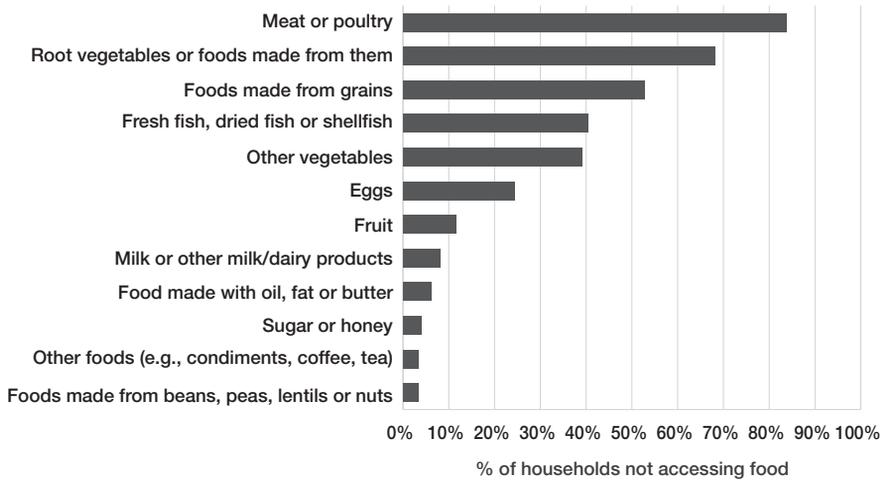
6.4 Food Prices

Two-thirds of Dschang households said they had gone without certain types of food in the previous six months because they were unaffordable (40% monthly, 19% weekly, and 8% more often than weekly) (Figure 29). Root vegetables and foods made from them were the most cited as inaccessible because of food prices (59%). They were followed by meat and poultry (56%), and fish and shellfish (30%) (Figure 30). Honey or sugar and condiments were least likely to be unaffordable. Although root vegetables, tubers and meat are produced locally, it is a common perception locally that price and availability are influenced by the export of these products to Cameroon's major cities (Douala and Yaoundé) or to neighbouring countries. The export market creates local shortages and therefore generally causes price volatility based on national and international economic forces.

FIGURE 29: Experience of Going Without Foods Due to High Prices

- ■ Never
- ☐ About once a month
- ▨ About once a week
- ▩ More than once a week but less than every day of the week
- ▨ Every day
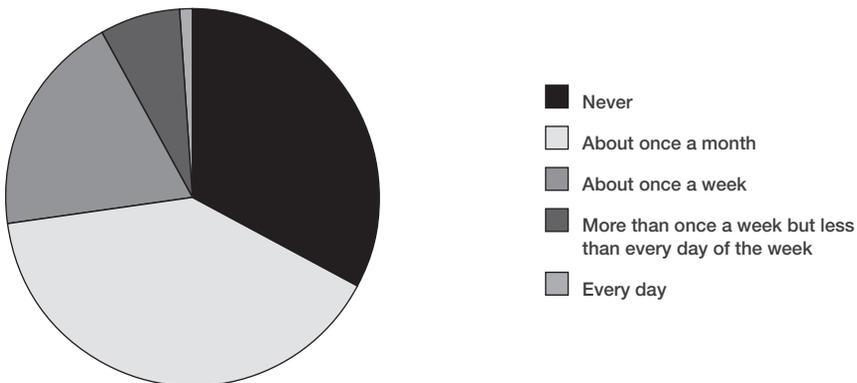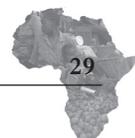
FIGURE 30: Types of Food Affected by High Prices
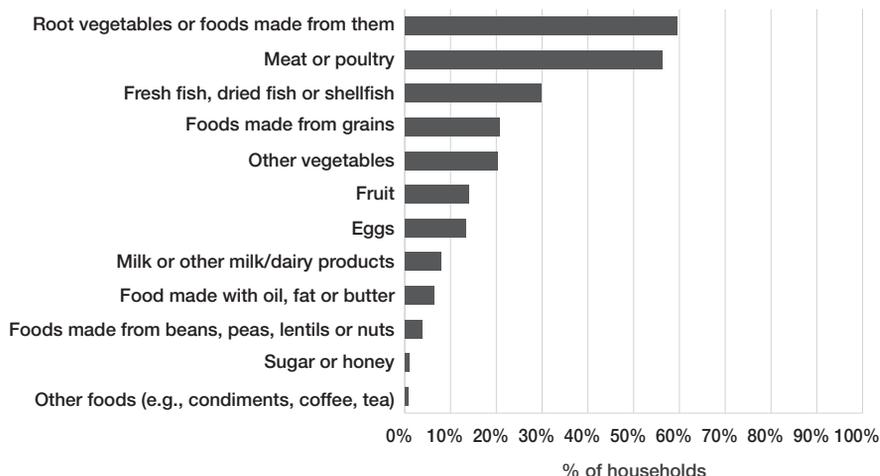
6.5 Food Security, Poverty, and Household Characteristics

Table 4 cross-tabulates the LPI and the food security measures with household type. Male-centred households were the most food insecure in terms of mean HFIAS (10.2) and the poorest in terms of mean LPI (1.88). By contrast, they had the highest mean HDDS (5.5) and were on a par with single-person households in having the highest MAHFP (10.8). Female-centred households were the second most food insecure in terms of mean HFIAS (8.8) and second poorest in mean LPI (1.54). They also had the lowest dietary diversity (with an HDDS of 4.7) and the worst HFIAP (i.e. the highest percentage of severely food insecure and the lowest percentage of food secure). Extended households were the least poor in terms of LPI (0.91) and least food insecure in terms of the HFIAS (7.1). However, even their HFIAP results revealed a percentage of severe food insecurity above the overall mean of 67%. Nuclear households were the only type with a severely-food-insecure percentage below the mean.

These mixed results illustrate the different ways in which different household types experience food insecurity and poverty. The higher rate of food insecurity and poverty among male-centred households relative to female-centred households suggests that the lack of a partner is more closely linked to vulnerability for men than for women, perhaps because of limited food skills or other cultural factors (Riley and Legwegoh, 2018). This hypothesis appears to be contradicted by the higher HDDS for male-centred households (suggestive of food knowledge) and by the relatively positive scores for single person households, so further research is required in the local context.

TABLE 4: Food Security and Poverty Scores by Household Type		Female-centred	Male-centred	Nuclear	Extend-ed	Single-person	All house-holds
LPI (Mean)		1.54	1.88	1.33	0.91	1.30	1.39
HFIAS (Mean)		8.8	10.2	7.4	7.1	8.1	8.0
HDDS (Mean)		4.7	5.5	5.2	5.2	4.8	5.1
MAHFP (Mean)		10.6	10.8	10.6	10.6	10.8	10.6
HFIAP (%)	Food secure	13.9	15.9	21.5	17.4	18.3	18.4
	Mildly food insecure	2.3	1.6	5.2	1.2	4.2	3.9
	Moderately food insecure	11.6	11.1	11.5	10.5	7.5	10.8
	Severely food insecure	72.3	71.4	61.8	70.9	70.0	66.8

6.6 Food Security and Migration Status

Migrant households (with all members born outside of Dschang) are the least poor in terms of their mean LPI (1.32), with mixed households having the highest mean LPI (1.44) and non–migrant households (all members born in Dschang) falling in the middle (1.38) (Table 5). In terms of the HFIAS, the results were reversed, with migrant households the most food insecure (8.6) and mixed households the least food insecure (7.4). The dietary diversity scores showed yet a different pattern, with migrant households having the highest average HDDS (5.6), followed by mixed households (5.4) and non–migrant households (4.7). These mixed results suggest a complex relationship between migrancy, poverty and food insecurity that requires further research attention. Research on the situation of IDPs would be particularly timely.

The breakdown in the components of the LPI scores sheds some light on the apparent complexity of these findings: migrant households were far less likely than other types of households to go without medicine or medical treatment in the previous year (68% "never" went without as opposed to 51% of mixed and 47% of non–migrant households). This difference would have lowered their average LPI score as a group. Migrant households' access to medicine and medical treatment is possibly due to the high representation of university staff and students and other government employees within the population of migrant households, and the likelihood that these people would have access to medical facilities. The breakdown of the LPI also reveals that migrant households more frequently went without food than other types of households: the proportion who went without food "always," "several times" or "many times" was 44% among migrant households, and 36% for both mixed and non–migrant

households. The high frequency of food deprivation within the LPI questions lends further evidence to support the observation that migrant households in Dschang are likely to be food insecure without necessarily being poor in other ways.

TABLE 5: Food Security and Poverty Scores by Household Migration Status			
	Migrant household	Mixed household	Non-migrant household
LPI (Mean)	1.32	1.44	1.38
HFIAS (Mean)	8.6	7.4	8.2
HDDS (Mean)	5.6	5.4	4.7
MAHFP (Mean)	10.7	10.7	10.5

6.7 Food Security and Household Income

The cross-tabulation of income quintiles with poverty and food security scores in Table 6 carries the caveat of the low response rate for income data. The LPI scores are remarkably similar across income quintiles, perhaps reflecting the fact that infrastructure problems such as the distribution of electricity and water in Dschang affect rich and poor alike. The second poorest income quintile are the most food insecure across HFIAS, HFIAP, and HDDS scores. The poorest income quintile, counter-intuitively, has the second highest percentage of food secure households. It is possible that this reflects success in subsistence agriculture and therefore households less reliant on market purchases for food access. The food security scores for households in the highest income quintile are the best overall, with an average HFIAS of 4.7, an HDDS of 6.6, and less than half (45%) severely food insecure.

TABLE 6: Food Security and Poverty Scores by Income Quintile						
		1	2	3	4	5
LPI (Mean)		1.47	1.45	1.38	1.40	1.52
HFIAS (Mean)		8.5	9.2	9.0	7.0	4.7
HDDS (Mean)		5.4	5.2	5.5	6.3	6.6
MAHFP (Mean)		10.6	10.6	10.6	10.6	10.4
HFIAP (%)	Food secure	20.8	8.9	10.6	14.9	27.7
	Mildly food insecure	2.1	8.9	2.1	2.1	6.4
	Moderately food insecure	4.2	6.7	17.0	17.0	21.3
	Severely food insecure	72.9	75.6	70.2	66.0	44.7

Households with income from casual wage work have the highest (worst) LPI average (1.76) and an extremely high average HFIAS of 10.2 (Table 7). Casual wage work income thus appears to be highly related to food insecurity and poverty. In contrast, households with income from formal wage work have the lowest average HFIAS (4.8) and the highest HDDS (6.1) and MAHFP (11.0) scores of any group. Households with income from informal wage work, which by definition is more of a regular income than casual wage work, are slightly better off in their LPI than households with income from formal wage work, but fare worse on food security scores. Comparing households with income from "the production and sale of fresh produce" and those with income from "the sale of fresh produce that they did not produce" shows that on all measures of poverty and food security, producing households are worse off on average.

TABLE 7: Food Security and Poverty Scores by Income Type					
	Informal production and sale of fresh produce	Informal wage work	Formal wage work	Regular financial support from friends or family	Casual wage work	Informal sale of fresh produce not produced by household
LPI (Mean)	1.51	1.11	1.15	1.41	1.76	1.37
HFIAS (Mean)	8.4	7.7	4.8	8.5	10.2	7.6
HDDS (Mean)	4.5	4.9	6.1	5.0	4.8	5.1
MAHFP (Mean)	10.3	10.5	11.0	10.6	10.7	10.7
Note: Some households have more than one income source and may therefore appear more than once in the table					

6.8 Dschang Food Security in Comparative Perspective

Comparing the HFIAS scores for Dschang with the other two sites surveyed for this project (Oshakati-Ongwediva-Ondangwa, Namibia, and Mzuzu, Malawi), it appears that the levels of household food insecurity in Dschang are lower than in Namibia (Nickanor et al., 2019) and higher than in Malawi (Riley et al., 2018). However, the HFIAP scores show that the proportion of severely food insecure households is very much higher in Dschang (67%) than either Oshakati-Ongwediva-Ondangwa (52%) or Mzuzu (38%). This finding suggests that households in Dschang who experience occasional food insecurity experience the most severe *kinds* of events (i.e., those at the top of the list in Figure 21). Another possible explanation is that because the experience of "any member" changes

the response to the question, the finding could reflect intra-household inequality in the context of the hosting of displaced people from the Anglophone regions. It could also be a reflection of the structural informality of the local economy: compared to the 18% of households with formal wage income in Dschang, 23% of households in Mzuzu and 53% of households in Oshakati-Ongwadiva-Ondangwa had formal wage income. The precarity of income sources could expose households who are usually able to access food to occasional severe experiences that shape how they are classified by the HFIAP tool. Dschang has the highest HDDS of the three, suggesting that there is a greater variety of food available and that people eat a wider variety of foods.

TABLE 8: Comparison of Household Food Security Scores				
		Dschang	Mzuzu	Oshakati-Ongwediva-Odangwa
HFIAS (Mean)		8.0	6.5	8.5
HDDS (Mean)		5.1	4.1	4.8
MAHFP (Mean)		10.6	10.4	10.8
HFIAP (%)	Food secure	18.4	29.0	23.0
	Mildly food insecure	3.9	11.0	8.0
	Moderately food insecure	10.8	22.0	17.0
	Severely food insecure	66.6	38.0	52.0

7. FOOD SYSTEM OF DSCHANG

7.1 Food Sources

The surveyed households in Dschang overwhelmingly rely for their food on markets that open on specific days. B Market in the city centre is open every day but is busiest on "market days" (every eighth day is a "big market day" and the middle day in between big market days is a "small market day"). C Market is vacant except on market days when it becomes a vibrant centre of commerce. Nearly all households (91%) buy food at open markets and three in every five households (60%) do so on a weekly basis (Figure 31). Nearly one in every four households (24%) reported that open markets were their sole food source. There is no major supermarket outlet in Dschang comparable to the regional chain stores in Oshakati-Ongwediva-Ondangwa and Mzuzu. The only shop named *supermarché* sells dry groceries, beverages, and other non-food items. Fewer than one in ten households access food from supermarkets, which is a much lower

proportion than in the other two study sites (Riley et al., 2018; Nickanor et al., 2019).

FIGURE 31: Frequency of Use of Different Food Sources
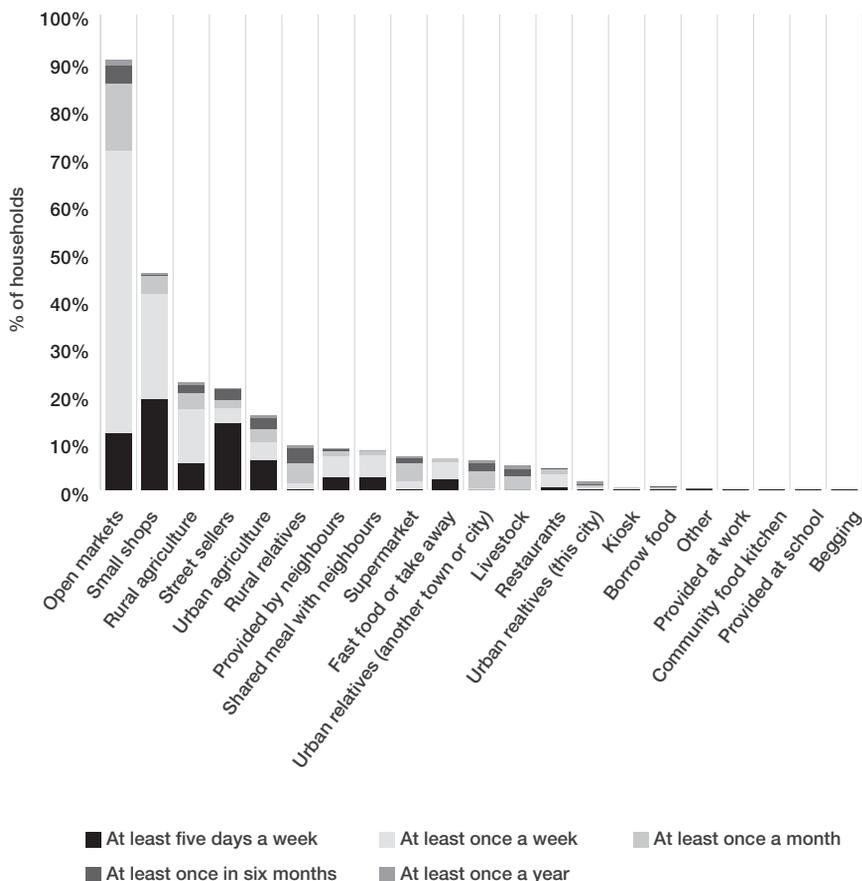
7.2 Food Purchases

The food items purchased by the most households in the month prior to the survey included rice (84%), cooking oil (72%), white bread (70%), dried fish (57%), sugar (56%), and pasta (53%) (Table 9). Slightly less than half of the households had purchased fresh or cooked vegetables, reflecting the widespread practice of urban and rural agriculture, which replaces the need to purchase these items. Many processed and cooked foods were only purchased by a few households.

Figure 32 shows the sources of the top 10 foods purchased in the previous month (each household identified one main source per item). The dominance of open markets is reflected here: most households usually buy eight of the most widely purchased 10 foods at markets, including a range
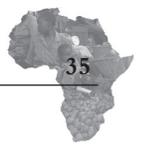
of fresh foods (fresh/cooked vegetables 64%), eggs (62%) and fresh fruits (62%); groceries (cooking oil 80%, sugar 55%); and dry foods (rice 76%, dried fish 75%, pasta 69%). White bread is usually purchased at small shops (by 69% of households) and meat at a butchery (by 54%). Notably absent as main sources of the most popular foods are supermarkets and street vendors.

TABLE 9: Proportion of Households Buying Food Items	
Type of food	% of households
Rice	83.3
Cooking oil	72.4
White bread	70.8
Dried fish	57.3
Sugar	55.5
Pasta	53.0
Fresh/cooked vegetables	49.2
Fresh fruits	42.3
Fresh meat	39.5
Eggs	38.1
Fresh fish	29.8
Frozen fish	29.5
Tea/coffee	23.3
Fresh chicken	16.2
Candy/chocolate	15.3
Sour milk	14.2
Maize meal	13.5
Fresh milk	11.2
Frozen meat	6.7
Cooked meat	2.2
French fries	2.0
Brown bread	1.7
Frozen chicken	1.6
Snacks	1.6
Cooked chicken	1.5
Cooked fish	1.3
Dried meat	1.0
Canned vegetables	0.6
Dried fruit	0.2
Pies/samosa	0.2
Canned fruit	0.1
Dried vegetables	0.1

FIGURE 32: Purchase Sources for Major Foods
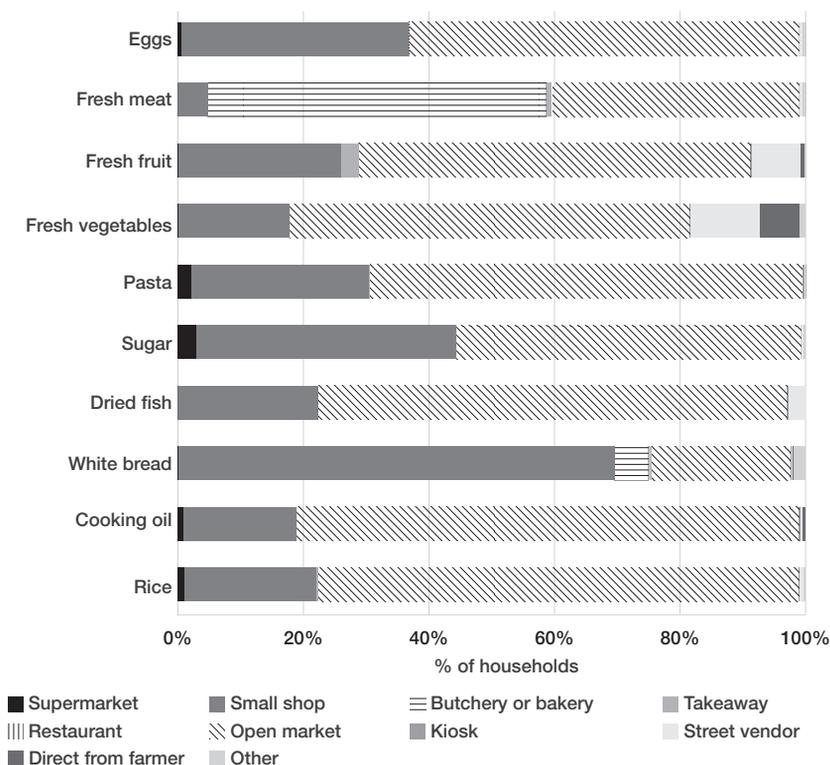
Few households bought the most widely purchased foods outside Dschang. Figure 33 shows which foods were purchased within the neighbourhood of the household and which were purchased in a different neighbourhood in the city. Only white bread was bought within the neighbourhood by more than half the households, although sizeable minorities usually purchase sugar (47%), eggs (44%), and fresh vegetables (39%) within their neighbourhoods. Only one in every 10 households (10%) purchased fresh meat within their neighbourhoods, making it the least physically accessible of these foods. Few food sources were located in another city or a rural area outside the municipality.

The frequency of purchase of various food products partly reflects their accessibility but it may also be related to whether or not people have enough money to buy food in bulk or have a home storage appliance. White bread is highly accessible geographically, and is also most likely to be purchased on a daily basis (by 57% of purchasing households). Fresh fruits were the second most likely to be purchased daily (35%). The following foods were usually purchased monthly: cooking oil (53%), sugar (47%), pasta (47%), fresh meat (41%), and eggs (35%). Foods most likely to be bought weekly were dried fish (61%), fresh/cooked vegetables (59%), fresh fruits (42%), and rice (39%) (Figure 34).

FIGURE 33: Geographical Location of Food Purchase Sources

Legend:
- Within neighbourhood (walking distance)
- Outside this neighbourhood but in this city
- Other rural area
- Other urban area
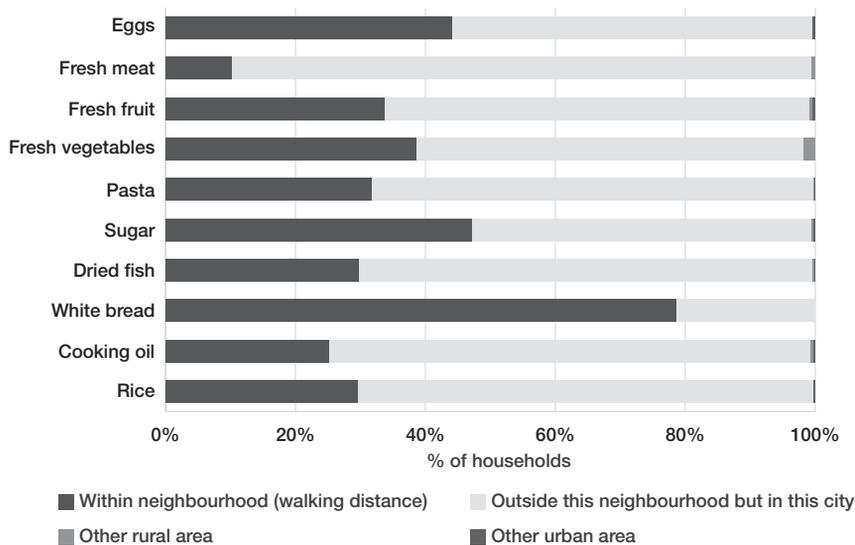
FIGURE 34: Frequency of Food Purchase by Households

Legend:
- At least 5 days a week
- At least once a week
- At least twice a month
- At least once a month
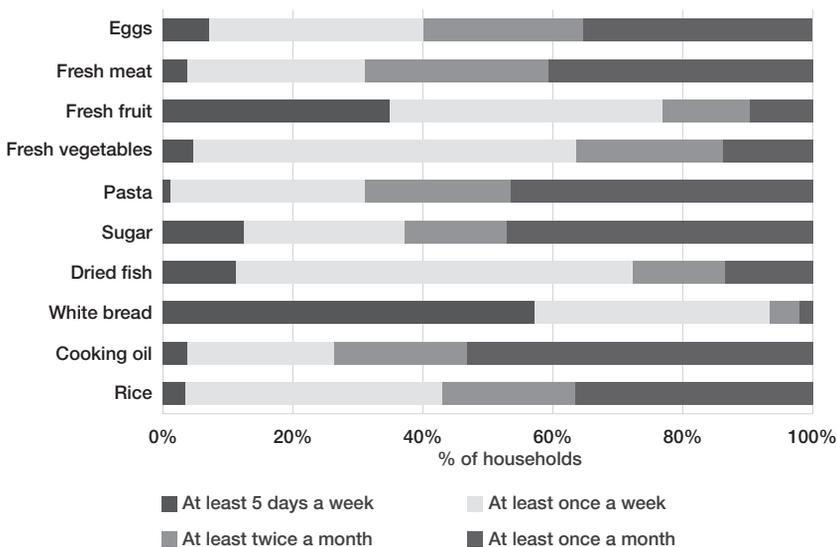
7.3 Household Food Production

The concept of urban agriculture in its broadest definition encompasses a variety of food production and consumption activities that can take place in or around the boundaries of urban agglomerations (De Zeeuw and Dreschel, 2015). Horticulture, raising livestock, aquaculture, beekeeping, forestry production activities and even, on occasion, processing and selling the products from these activities in cities and on the periphery, are all considered urban and peri-urban agricultural activities. Second-

ary cities often have more opportunities for urban agriculture because of lower population densities and the proximity of rural spaces to urban residents. Dschang includes rural and peri-urban areas within the municipal boundaries where food production is the main economic activity.

Only 24% of the surveyed households do not produce any of the food they consume (Figure 35). A similar proportion produce food for the household in both rural and urban areas, while 36% produce food only in urban areas. The rest (18%) produce food only in rural areas.

FIGURE 35: Food Production by Households

Does not produce food
Produces only in urban
Produces only in rural
Produces in rural and urban
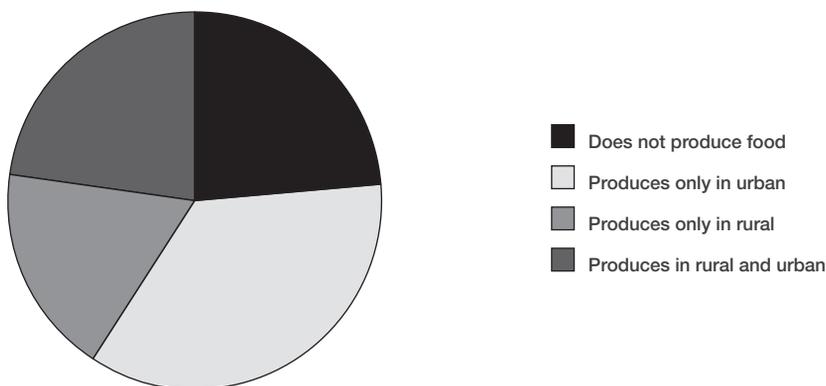
7.3.1 Rural Agriculture

Two in every five households that produce food exclusively or partially in rural areas do so for their own consumption and almost three-quarters of these households own the land on which they produce food. Table 10 lists the main crops produced by these households that were asked about specifically in the survey based on an understanding of the local staple crops: corn/maize (95%), plantains (80%), cassava (72%), cocoyams (68%), and potatoes (63%). In order to gather a fuller picture of the range of crops produced in the area, respondents were asked to name their other crops and these included beans, yams, soy, avocado, peanuts, sweet potatoes, mangoes, tomatoes, cabbage, sugar cane, eggplant and carrots. Nearly one in every three households that produce food in rural areas (30%) produce all of the listed foods and at least one "other" crop.

The average time respondents took to reach the place where their rural crops were produced using their usual means of transport (which could be a combination of minibus, taxi and motorcycles) was 79 minutes, with a median and mode of one hour (Figure 36). A few households (around 5%) travel four hours or more to their land; partly a reflection of the poor road conditions in rural Cameroon as well as the distance to their farms.

About one-quarter travel for 2-4 hours, another one-quarter between 1-2 hours, and another between half an hour to one hour. Most of the households who spend the shortest time travelling could be resident in the peri-urban or rural areas of Dschang Municipality.

TABLE 10: Crops Produced in Rural Areas by Dschang Residents	
Food	% of crop producing households
Corn/maize	95.1
Plantains	79.9
Cassava	72.4
Cocoyams	68.3
Potatoes	62.9
Note: Multiple-response question	

FIGURE 36: Time Needed to Reach Rural Farms

Legend:
- >= 240 minutes
- 120-239 minutes
- 60-119 minutes
- 30-59 minutes
- 10-29 minutes
- <10 minutes
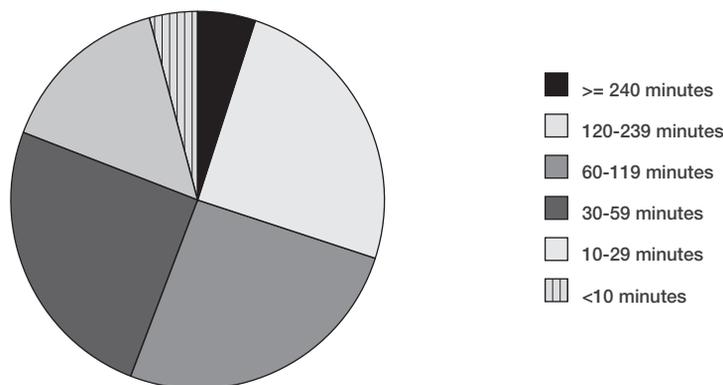
7.3.2 Urban Agriculture

More than half of the surveyed households in Dschang (59%) grow some of their own food in the urban areas. This is much higher than the 38% in Mzuzu (Riley et al., 2018) and 20% in Oshakati-Ongwediva-Odangwa (Nickanor et al., 2019). The most popular food crop is cassava (94% of households producing food in urban areas) (Table 11), followed by plantains (82%), corn/maize (75%), cocoyams (67%) and potatoes (56%). Other popular crops included beans, peanuts, sweet potatoes, yams, melons, cabbages, and avocados.

Over three-quarters of those involved in urban agriculture cultivated food on their own housing plots (Table 12). About one in every five practised urban agriculture within their neighbourhood but outside their residential property (either on unbuilt land or rented land near their homes). The

practice of growing food on balconies or terraces, on other urban land and on river beds is less common.

TABLE 11: Crops Produced in the Urban Areas of Dschang	
Food	% of crop producing households
Cassava	94.0
Plantains	81.9
Corn/maize	74.7
Cocoyams	67.1
Potatoes	56.0
Note: Multiple-response question	

TABLE 12: Location of Urban Agriculture	
	% of participating households
Own housing plot	77.5
Within residential area, but outside own plot	20.5
On riverbed	6.8
On roadside	5.2
Other urban land	1.6
Hanging garden/balcony/terrace	0.9
Urban forest	0.7
On industrial site	0.2
Note: Multiple-response question	

Table 13 shows why some households do not grow their own food. The most common reason (mentioned by 61%) was that they have no land to cultivate. Other reasons were much less important, and only 1% thought that agriculture was for rural people only.

TABLE 13: Reasons for Not Engaging in Urban Agriculture	
	% of non-food-producing households
We have no land on which to grow food	61.0
We do not have the time or labour	20.4
We lack the skills to grow food	16.5
It is easier to buy our food than grow it	13.9
We have no interest in growing food	9.9
We do not have access to inputs (seeds, water, fertilizer)	9.9
People would steal whatever we grow	4.2
Agriculture is for rural people only	1.0
Note: Multiple-response question	
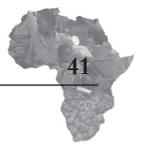
7.3.3 Urban Livestock

Almost half of the households keep livestock in the city. Of these, 88% raise chickens, followed by pigs (43%) (Table 14). Other livestock included ducks, rabbits, goats, sheep, guinea pigs, geese, and turkeys.

TABLE 14: Animals Raised in the City for Food Production	
Livestock	% of participating households
Chickens	88.1
Pigs	42.9
Ducks	8.9
Rabbits	4.4
Other	22.2
Note: Multiple-response question	

More than half of the households that do not keep livestock said they do not have the land to do so, making this the most important barrier to urban livestock rearing (Table 15). Close to 20% said they did not have the skills, that people would steal their livestock, and that they did not have the time or household labour. Only 13% said it was because they had no interest in raising livestock and just 2% thought it was a rural activity only.

TABLE 15: Reasons for Not Raising Livestock in the City	
	% of households not keeping livestock
We have no land on which to keep livestock	54.1
We lack the skills to keep livestock	20.6
People would just steal whatever livestock we keep	18.9
We do not have the time or labour	17.5
We do not have access to inputs for keeping livestock (e.g. feed)	16.1
We have no interest in keeping livestock	12.6
It is easier to buy our food than to get it from livestock	4.9
Raising livestock is for rural people only	2.1
Note: Multiple-response question	

7.3.4 Food Security and Household Food Production

Households that produce crops are generally poorer than those who do not in terms of the LPI (1.41 versus 1.31) (Table 16). They are also more food insecure on average (mean HFIAS 8.1 versus 7.5) and have less diverse diets (mean HDDS 4.9 versus 5.8). There are relatively small differences between households that raise livestock and households that do

not raise livestock in terms of LPI (1.38 and 1.41 respectively) and HFIAS (7.9 and 8.1 respectively). Households that raise livestock have less dietary diversity and lower food stability over the course of the year. These results might be interpreted as suggesting that food production is not helping to support food security and reduce poverty, however it is likely that producing households would be worse off without the food they produce. The results suggest that for many households, the food they produce is not sufficient to protect them against hunger and poverty.

TABLE 16: Food Security and Poverty by Household Food Production				
	Produces crops	Does not produce crops	Raises livestock	Does not raise livestock
LPI (Mean)	1.41	1.31	1.38	1.41
HFIAS (Mean)	8.1	7.5	7.9	8.1
HDDS (Mean)	4.9	5.8	4.8	5.4
MAHFP (Mean)	10.5	10.9	10.5	10.7

7.4 Food Transfers

The importance of informal food transfers as a source of food varies across Southern Africa (Nickanor et al., 2016). AFSUN found that 28% of households in low-income areas of 11 cities received food transfers, although this percentage varied from a low of 14% in Johannesburg, South Africa, to a high of 47% in Windhoek, Namibia (Chikanda et al., 2017). The percentage of households receiving transfers in Dschang was 48%; more than the 28% in Mzuzu (Riley et al., 2018) and less than the 55% in Oshakati-Ongwediva-Ondangwa (Nickanor et al., 2019). More than three-quarters (77%) of transfer-receiving households receive them from a rural source and 31% from an urban source (Table 17). Relatives were far more likely to be the source of food transfers than friends: 96% of transfer-receiving households received transfers from relatives and 9% from friends. The most common sources of transfers are rural relatives (64% of transfer-receiving households), followed by urban relatives (29%). Very few households receive food from rural or urban friends.

Table 18 shows the types of foods given to households in Dschang. Tubers and plantains were the most common items, received by 61% and 60% of beneficiary households respectively. About half of these households received corn/maize and potatoes. Other important foods transferred included oil, various vegetables, and fish. Many households received several of these foods, with 15% receiving five or more types.
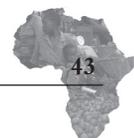
TABLE 17: Source of Food Transfers

		% of transfer-receiving households
Source	Rural only	69.2
	Urban only	23.1
	Both rural and urban	7.7
Senders	Relatives only	91.5
	Friends only	4.5
	Relatives and friends	4.0
Specific source (multiple responses)	Rural relatives	64.0
	Urban relatives	29.4
	Rural friends	3.5
	Urban friends	2.8

TABLE 18: Types of Food Received by Households

	% of transfer-receiving households
Tubers (cassava, yam, cocoyam)	60.9
Plantains	60.2
Corn/maize	49.6
Potatoes	49.4
Rice	27.9
Oil (red palm, white palm, peanut)	26.2
Vegetables (tomato, cabbage, carrot, leek)	17.6
Fish	13.6
Beef or canda (cow skin)	2.6
Bushmeat	1.9
Eru/okok	1.6
Note: Multiple-response question	

Figure 37 shows whether particular foods came predominantly from rural or urban areas. The foods most likely to be received from an urban source are fish, rice, beef or canda, and oil. Those most likely to be received from a rural source are potatoes, corn/maize, tubers, and plantains. The primary difference is that urban–source transfers tend to be purchased by the senders while rural–source foods are cultivated.

The main reason transfer–receiving households were sent food, according to the recipients, was to help the recipients feed themselves (92% agreed). Only a small percentage (3%) said the reason for the transfer was for recipients to earn income by selling the food. Almost all recipients agreed that these food remittances were important or very important to the household, but only a few said they were essential for survival (Figure 38). In a context of price fluctuations in the markets and the fact that staples such as cassava, cocoyams, plantains, and yams are becoming increasingly

expensive, food transfers are likely to become even more important for urban household food security.

FIGURE 37: Geographical Source of Foods Transferred
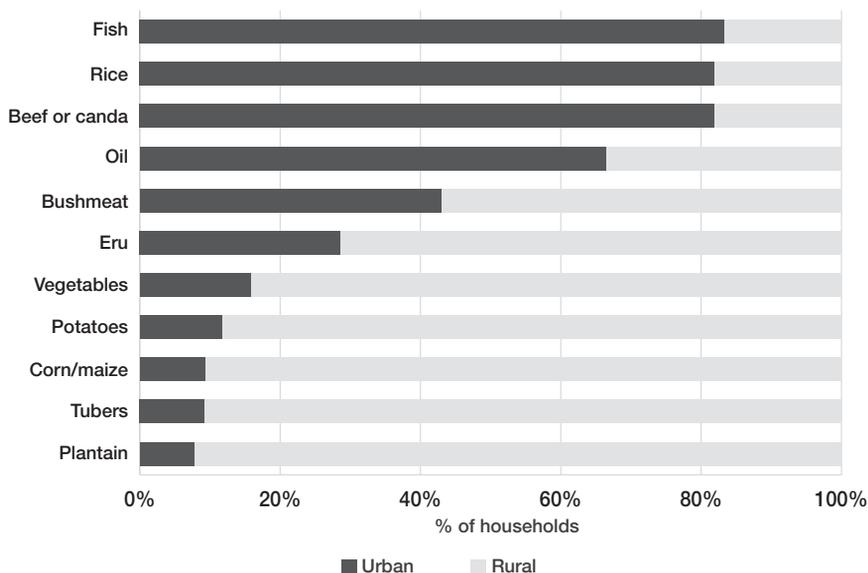
FIGURE 38: Perceptions of Importance of Food Transfers

- Not at all important
- Somewhat important
- Important
- Very important
- Critical to our survival
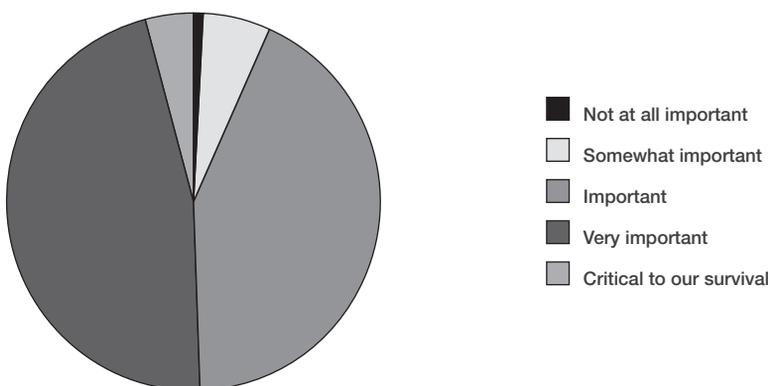
Households that received food transfers had the same mean LPI as those that did not, suggesting that there is not a discernable difference between households with different levels of povertry in terms of who receives or does not receive transfers. The higher average HDDS among transfer-receiving households suggests that food transfers have a positive impact on dietary diversity, and yet the higher mean HFIAS suggests that this higher level of diversity does not improve overall food security (Table 19).
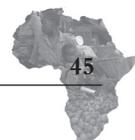
TABLE 19: Relationship between Transfers, Food Security and Poverty		
	Receives food transfers	No transfers
LPI (Mean)	1.4	1.4
HFIAS (Mean)	8.6	7.4
HDDS (Mean)	5.3	4.8
MAHFP (Mean)	10.7	10.6

8. INDIGENOUS FOODS

In Cameroon's secondary cities, the food system incorporates foods that are indigenous to the environment and cultural traditions of each region, culture, and ethnic group. These foods are combined in recipes with cultivated crops and imported foods (Sneyd, 2013). However, increasing homogenization of cuisine is evident in all regions of the country (for example, in the widespread popularity of *eru*, *ndolé*, and "DG chicken") due to factors such as inter-marriage between ethnic groups, mixing of agricultural and economic activities, agricultural diversification, and dietary change (Raimond et al., 2005). The comparative availability and affordability of certain foods in national food supply chains has also contributed to the gradual loss of regional dietary diversity (Batibonak and Defo, 2015).

Indigenous foods are not only important for supplying local food chains, they are also intricately embedded in local economies and ecologies. Kola nuts, bitter kola, and *safou* from wild fruit trees – *Dacryodes edulis*, *Cola nitida* and *Cola acuminata* – are maintained by people in what were plantations in colonial times and have traditionally played an important role in the economy of the West Region. Farmers plant, retain or preserve fruit and medicinal products on their land, in addition to wood that is used for carpentry or firewood (Degrande et al., 2006).

The economic benefits explain why farmers domesticate various species of indigenous trees. They have managed to increase production levels of *Irvingia gabonensis* (bush mango) and *Dacryodes edulis* (*safou*) and provide better quality fruits and nuts (Atangana et al., 2001; Leakey et al., 2002). According to Schreckenberg et al. (2002), fruit trees are a source of stable and low-risk household income. These fruits provide important household income, contributing significantly to food security and the fight against poverty. Kuat et al. (2006) found that the African plum and kola are dominant fruit trees in Foréké plantations in Dschang. They

also found that fruit trees are important for household food intake, but this contribution is often indirect as the fruits are mostly sold with the proceeds used to purchase other kinds of food.

This survey included a set of questions on the consumption of a pre-determined list of indigenous foods that are consumed in Dschang. The indigenous foods consumed by most households in the year prior to the survey were the *njansang* fruit (66% of households), bush/country onions (65%), *achu* spices (55%), bush butter/*safou* (50%), honey (44%), and bitter kola (42%) (Table 20). Other foods consumed by one-third or more of the households included palm wine, *rondelle*, *okok/eru*, kola nuts, and bushmeat. Indigenous and other foods are cooked together as traditional meals, for example, potatoes, bananas, beans, and red oil (palm) are the ingredients in *tchou mtom* and *tchou kolo*, a meal widely consumed in the Bamiléké region in which Dschang is located. Rice with peanut soup containing bush meat and dried or fresh fish is another common meal. Another staple for many Cameroonians is *ndole*, a spicy vegetable dish made from bitter leaf greens, meat, shrimp, and groundnut paste and served with plantains or yams. Foods that are consumed raw or grilled include bush mango, kola nuts, bitter kola, honey, and bush butter/*safou*.

TABLE 20: Indigenous Foods Consumed in Dschang	
	% of households
Njansang	66.0
Bush/country onions	65.0
Achu spices	54.5
Bush butter/*safou*	50.0
Honey	44.2
Bitter kola	42.2
Palm wine	40.3
Rondelle	35.4
Okok/eru	33.8
Kola nuts	30.0
Bushmeat	29.9
Mushrooms	23.2
Mbongo	21.5
Bush mango	13.8
Pebe	10.5
Forest snails	9.8
Rafia palm fruit	9.4
Termites	7.6
Green grasshoppers (*ngoh*)	7.2
Caterpillars	0.7

Figure 39 shows the frequency of consumption of different indigenous foods. Njansang and bush/country onions were the most widely and frequently consumed. Most of the other popular foods were consumed less often.

FIGURE 39: Frequency of Consumption of Indigenous Foods
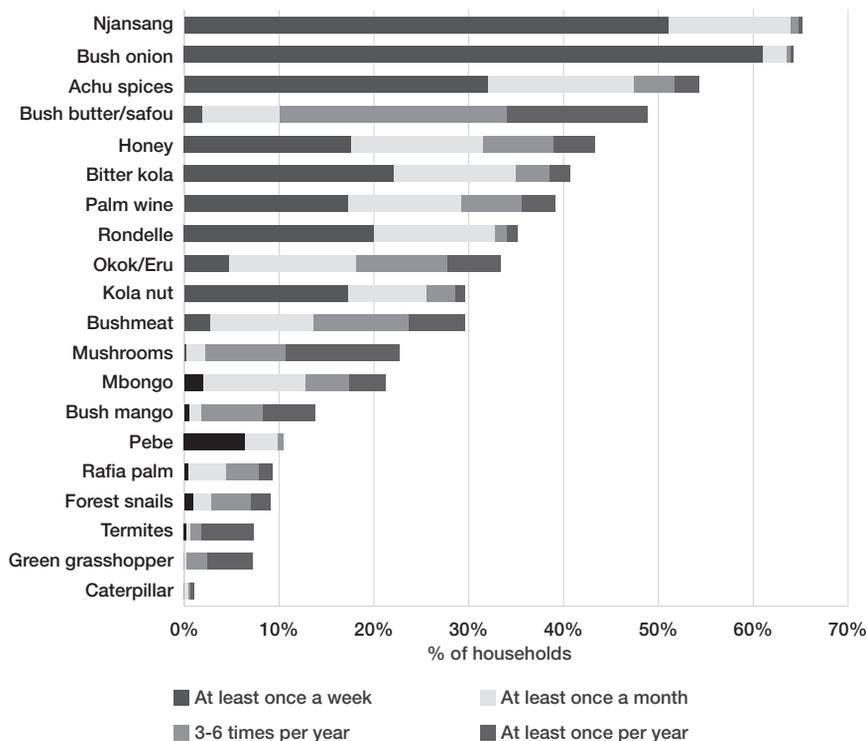
The main source of most indigenous foods is a market in the city (Table 21). Some exceptions that are mostly sourced from street sellers/ traders include bitter kola, kola nuts, palm wine, mushrooms, forest snails, bushmeat, and green grasshoppers. Termites are mostly collected within the city. Rural sources were also important, with several foods sourced at rural markets by at least 30% of consumers (bitter kola, honey, bushmeat, and bush/country onions). Nearly one in five households that consumed kola nuts grew or collected them in a rural area. Bush butter and mushrooms tended to be sent to them from rural areas. Small shops were also an important source for many foods, especially bush/country onion and *achu* spices.

	Small shop	Market in the city	Market in the coun- tryside	Street seller/ trader	Grown in city	Col- lected in city	Grown in rural area	Col- lected in rural area	Sent from rural area	Other
Achu spices	38.7	41.0	15.8	10.1	3.2	4.0	11.0	6.9	2.7	0.4
Bush mango	31.6	48.9	22.6	21.8	3.0	3.0	15.0	12.8	0.0	2.3
Okok/ eru	20.3	61.5	19.4	23.1	0.6	2.5	4.9	4.0	0.6	2.5
Njan- sang	30.9	61.4	24.4	18.0	0.6	1.7	0.9	0.8	0.6	0.2
Bitter kola	30.5	41.4	30.0	45.1	0.5	0.7	2.7	4.2	0.5	1.2
Kola nuts	23.9	33.2	22.5	37.4	7.3	6.6	19.7	17.6	2.8	2.4
Palm wine	8.2	23.2	28.4	43.3	1.8	7.2	6.7	11.9	4.4	2.8
Mush- rooms	7.6	32.3	26.0	41.7	1.3	17.5	4.9	9.9	8.5	3.1
Forest snails	7.4	33.0	8.5	45.7	1.1	5.3	2.1	9.6	4.3	6.4
Honey	20.0	47.3	31.3	18.8	0.5	1.6	0.9	3.5	6.4	1.9
Bush- meat	6.3	22.2	31.3	34.0	-	12.8	2.1	14.9	6.3	5.6
Pebe	17.8	79.2	21.8	9.9	-	-	-	-	-	-
Bush butter/ plums/ *safou*	15.2	46.8	26.2	38.7	6.7	10.6	8.7	9.4	8.7	0.2
Green grass- hop- pers (*ngoh*)	7.2	27.5	8.7	43.5	-	20.3	1.4	13.0	2.9	4.3
Rafia palm fruit	31.1	32.2	6.7	22.2	1.1	5.6	7.8	11.1	7.8	-
Mbon- go	26.6	61.8	15.0	13.5	-	2.4	0.5	-	-	1.0
Ron- delle	31.1	63.6	22.6	13.8	-	1.5	0.3	0.9	-	-
Bush/ coun- try onions	40.5	56.2	39.4	27.5	3.4	1.1	9.8	4.2	1.0	0.3
Ter- mites	1.4	17.8	12.3	35.6	1.4	42.5	1.4	11.0	4.1	2.7

TABLE 21: Source of Indigenous Foods

Note: Multiple-response question

The reasons for consuming each food were averaged to create an over-all sense if why households were consuming indigenous foods in general. "Nutritional or health reasons" (81% agreed) were by far the most important motivation for the consumption of indigenous foods (Table 22). The least important reasons were ceremonial/cultural and that the food was a gift. The only other reason mentioned by a significant number of respondents was as a supplement (rather than a substitute) to purchased food (26%). Table 22 shows the different reasons and the corresponding proportion of respondents and the top foods for each reason.

TABLE 22: Reasons for Consuming Indigenous Foods		
	Average percentage agreeing with reason for consuming each food	Top foods consumed for this reason (% of households)
Nutritional or health reasons	80.5	*Rafia* palm (99%) Termites (96%) Green grasshoppers (96%) Honey (93%)
Part of a meal when you have enough money to buy food	26.1	*Njansang* (64%) Bush onions (63%) *Achu* spices (59%) *Rondelle* (58%)
A snack between meals	9.3	Kola nuts (23%) Bush mango (23%) Palm wine (22%) Bush butter/*safou* (20%)
Part of a meal when you don't have enough money to buy food	2.0	Bush onions (9%) *Pebe* (8%) *Njansang* (7%) *Rondelle* (5%)
Ceremonial or cultural reasons	5.8	Kola nuts (38%) Palm wine (31%) Bitter kola (16%) *Achu* spices (11%)
Gift	1.3	Kola nuts (6%) Palm wine (5%) Bitter kola (2%) Honey (2%)

9. CONCLUSION

Key findings from this report include:

- Two-thirds of households are severely food insecure. In the month before the survey, most households had eaten a smaller meal than they felt they needed, had eaten fewer meals than normal, had not eaten preferred foods, had eaten unwanted foods, had eaten a limited variety of foods, or had no food to eat in the household. Two-thirds

of households had gone without certain types of food because it was unaffordable.

- More than half of the respondents said they faced shortages of electricity, food to eat, cash income, and clean water.

- The most common sources of household income are from informal labour and the production and sale of fresh produce. Only one in every five households receive income from formal wages. The mean monthly household income was USD152 and the median was USD91.

- The proportion of income spent on food is directly related to overall household income. The ratio of mean income to mean food expense in the highest income quintile is about 5:1, compared with 2:1 in the second lowest quintile and 2:3 for the lowest income quintile.

- Most households live in a dwelling where the kitchen and bathroom are outside.

- April was the month in which the most households did not have adequate access to food. This is one of three months (with March and May) when the agricultural cycle is the main reason for food inaccessibility. Inadequate food provisioning in other months relates more to lack of cash.

- The population of Dschang is young: about one in every four people are under 10 years old and 70% are younger than 30.

- The average household size is 4.5. Nuclear households are most common (46%), followed by female-centred households (19%) and households of one person (13%). Extended households (10%) and male-centred households (7%) are less common.

- One in five households is a first-generation migrant households (that is, every member of the household was born outside the city), while 46% had no migrant members and 34% comprised a mix of migrants and non-migrants. Nearly three-quarters of household members were born in Dschang and most of those from outside were born in another urban area in Cameroon (23%), meaning there were few rural-urban migrants.

- Male-centred households, although small in number, were the most food insecure and poorest, followed by female-centred households. Extended households were the least poor and the least food insecure. Nuclear households were the least likely to be severely food insecure.

- A formal wage income was associated with better-than-average household food security while casual wage income was associated with worse-than-average household food security.

- Open markets were the most important source for purchased food,
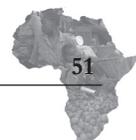
followed by small shops and street sellers. Supermarkets are notably absent from the food retail sector in Dschang.

- Of the 10 most widely bought foods, eight are mainly purchased at open markets (eggs, fresh fruits, fresh vegetables, pasta, sugar, dried fish, cooking oil, and rice). The other two important foods are white bread (mostly purchased from neighbourhood small shops) and fresh meat (from a butcher).

- About three in every four households produce some of their own food, either in rural or urban areas, usually on their own housing plot or farm. The main barrier to growing food is a lack of land. Almost half of the households keep livestock, with chickens being the most popular. Lack of space is again the main barrier to keeping livestock.

- Almost half of the households receive food transfers, which in most cases come from relatives in rural areas.

- Most households eat a variety of indigenous foods for nutritional and health reasons and these are generally accessed in the city markets or from street vendors.

In sum, the survey shows that food insecurity is a challenge for many households in Dschang. It also shows that the food system is dynamic and diverse, with households having access to foods from different sources. The data included in this report will help to identify vulnerable groups whose needs should be targeted in policy interventions. The data also reveal sources of strength in the local food system that can be built on to lead toward a more sustainable and inclusive city.

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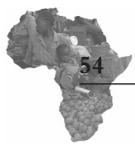
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FOOD SECURITY IN AFRICA'S SECONDARY CITIES: NO. 3. DCHANG, CAMEROON

This report forms part of the African Food Security Urban Network's efforts to increase knowledge on urban food systems and household food insecurity in Africa's cities. Focusing on food security in the municipality of Dschang in Cameroon, the report builds on studies of secondary cities in Malawi and Namibia. These studies confirm that household food insecurity is widespread in smaller African cities and is linked to poverty, rising food prices, high unemployment, and limited opportunities to produce food. This report on Dschang contributes to an understanding of poverty in the city in terms of what people are eating, how they get their food, and the difficulties households face in accessing necessities such as water and electricity. AFSUN's focus on food as an urban issue brings a new perspective to discussions on food security in Central Africa, particularly in Cameroon. While the region is rich in agriculture, food insecurity persists and solutions are usually sought through rural development and agricultural innovation. While this study focuses on Dschang, its findings and recommendations can be applied nationally as well as locally. The report aims to help Cameroon's government to improve its food security policies, food system governance, and urban planning.

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