



Food and Agriculture Organization
of the United Nations



STREET FOOD IN URBAN GHANA

A desktop
review and analysis
of findings and
recommendations
from existing literature

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and recommendations from existing literature

Edited by

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Food and Agriculture Organization of the United Nations

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INTRODUCTION

Street food is any ready to eat food or beverage sold and sometimes prepared in outdoor public spaces (e.g. streets, squares, parks, open-air markets, etc.) by vendors or cooks, either itinerant or stationary, either on foot or from mobile outlets (e.g. vans, carts, bicycles), removable outlets (e.g. stalls), fixed outlets without indoor space to accommodate consumers (eg. kiosks or take-away shop with kitchen overlooking the street).

In Africa, street food vending and consumption have proliferated in the last three and a half decades. Such phenomenon is strictly linked to urbanization, that is, the combination of increasing urban population (due to both natural growth and migrations from rural to urban areas), and spreading urban boundaries and urban sprawl¹. Indeed, on one side, a growing number of newcomers are pressing to access the waged labor market, which often does not expand as quickly, generating unemployment especially within those groups who rely on little social and cultural resources (eg. migrants, women). To these people, self-employment becomes the only way to earn a living, and street food vending, in particular, represents one of the easiest and viable jobs, as it requires little start-up capital and no formal education.

¹ The term "Urban sprawl" describes the expansion of human populations away from central urban areas into low-density, mono-functional and usually car-dependent communities whose social and economic activities are largely linked to and dependent on central urban areas.

On the other side, the increased commuting distances and the faster living and working pace have accentuated the demand for ready-to-eat, inexpensive, quick and nutritious food near the workplace among the growing urban low and middle working class. Given all the available solutions (e.g. restaurants, fast foods, bars, etc.) street food is the one that best suits the needs of these urban dwellers.

Nowadays, African national and local authorities, and international organizations agree on the nutritional, economic, social and cultural importance of street food, but they are also aware of the critical issues associated to it, especially food safety issues and widespread informality of the sector.

Since 1980s, the Food and Agriculture Organization of the United Nations (FAO) has been promoting the development of the safety and quality of street food as well as of vendors' livelihoods and working conditions in the Region through the implementation of several targeted projects and initiatives (e.g. surveys and assessment studies, training of vendors and health inspectors, workshops, institutional capacity building, etc.).²

² Since 1987, FAO has released about 30 reports about street food in Africa: 7 reports at Regional level, 2 at Sub-regional (West Africa) level, and 21 at country level. Four out of them focused on Ghana:

- Nicolo G. (2012). Report on the Study of street food vending in Ghana 2012. FAO RAF, Accra (Ghana). Unpublished.
- Nicolò, G., Ag Bendeck M. (2012). Street Food Vending in West African Cities (Mali, Cote d'Ivoire, Sierra Leone, Ghana) – Potential and Challenges. FAO RAF, Accra (Ghana), December 2011 - May 2012.
- De Boer, F.A. (1996). Street food situation in Ghana (SFSIG). Phase III. Hazard Analysis and Critical Control Point (HACCP) study on

The present report focuses on the case of Ghana, outlining and analysing the multiple dimensions of this complex phenomenon that still shows large gaps and ample room for development.

METHODOLOGY

A desk-top review of documents (e.g. scholarly articles, projects' reports, conferences and workshops' proceedings) analyzing and discussing the street food sector in Ghana was carried out.³ More than a hundred documents were found published in the last fifteen years.⁴ Considerable interest

selected street foods in Ghana. FAO, Rome (Italy). Food and Nutrition Div.

- De Boer, F.A. (1996). Situation of street foods in Accra (Ghana), phase IV: participatory rapid assessment. Report of a mission in Ghana, 11-26 Aug 1996. FAO, Rome (Italy), Food and Nutrition Div. Report number(s): FAO-ESN--GHA/94/01T.

Other documents focused on Côte-d'Ivoire (9), Dem.Rep.Congo, Nigeria (3), Mali, Tanzania (2), Mozambique, Chad, Senegal, Sierra Leone, South Africa, Uganda (1).

Five Technical Cooperation Programmes (TCPs) were funded and implemented: 1993-95 (Ivory Coast); 1994-1995 (Zaire); 2002 (South Africa); 2002 (Senegal); 2013-15 (RAF - Ivory Coast, Mali, Tchad).

³ The analysis also relied on media sources (e.g. news, websites) and legal documents (e.g. by-laws) in order to provide additional information when needed.

⁴ Some of the documents selected (Antwi et al, 2015; Luure et al, 2015; Beccles, 2014; Steel et al, 2014; TUC & WIEGO, 2014a, 2014b, 2013a, 2013b; Abrokwah, 2013; Anyidoho, 2013; Owusu Barimah et al, 2013; Broadbent, 2012; Osei-Boateng, 2012; Boakye, 2011; Osei-Boateng & Ampratwum, 2011; Solomon-Ayeh et al, 2011; TUC, 2011; Asiedu & Agyei-Mensah, 2008; Ofori, 2007; Overå, 2007; Alfors, 2006; IFPRI, 2003;

in the sector has arisen in particular starting from 2011 (45 documents published since then). An anomalous high amount of documents (18) is recorded in the year 2000 alone, when a major conference on the subject was held in Accra, attended by all the major stakeholders: ministries, municipality, vendors associations, and research centers.⁵

Accra is the most studied case, followed by Kumasi and then Tamale. Most of the documents focused on food

Mitullah, 2003; Levin et al, 1999) look at the broader street vending sector, not only nor necessarily focusing on "street food", but including all sorts of vendors operating in the street. Although the street food sector has its own specificities compared to other street trades (e.g. policies related to food safety), broader studies are nonetheless important and consistent with the purposes of this report as all street vendors in Ghana fall under the same main policy, legislative, and regulatory framework. Moreover, they often fall within the same political and public "discourse" and are thus victims of similar stereotyping processes.

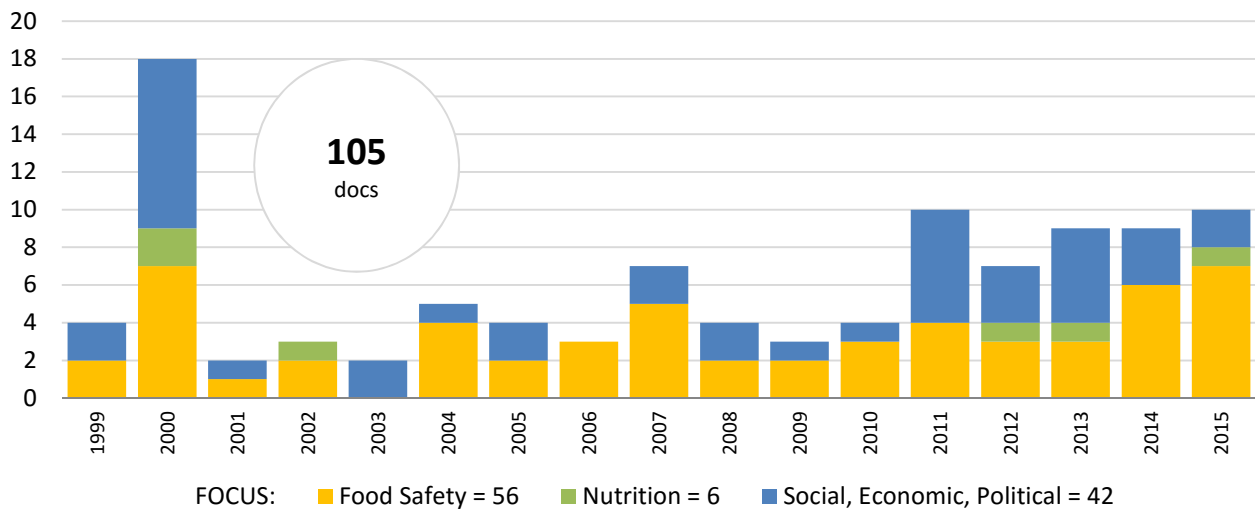
"Research by Iyenda (2005) identifies two modes of street vending in Accra: itinerant, or walking, and stationary, or fixed. Itinerant hawkers [...] included shoe repairers/polishers, sellers of a wide variety of items such as fruit (oranges, pineapples, pawpaw, bananas, avocados), bread, newspapers, magazines, stationery, drinking water in sachets, herbal drugs, cooked food, detergents, soaps and clothing (new and used). Stationary hawkers [...] sell items such as VCD/DVD players and films, phone cards, mobile phone accessories, plastic wares, cooking utensils, used clothing, cooked food, roasted plantain, fruit and vegetables. They also offer other services such as telephone systems (known as 'space to space' in Ghana), carpentry and vehicle repair" (cit. Broadbent, 2012: 4). Further studies reveal no major differences in the commodities sold in the streets in Ghana.

⁵ Workshop for stakeholders, policy makers and regulators of street-food vending in Accra, held at Miklin Hotel, 25- 26, Sept. 2000

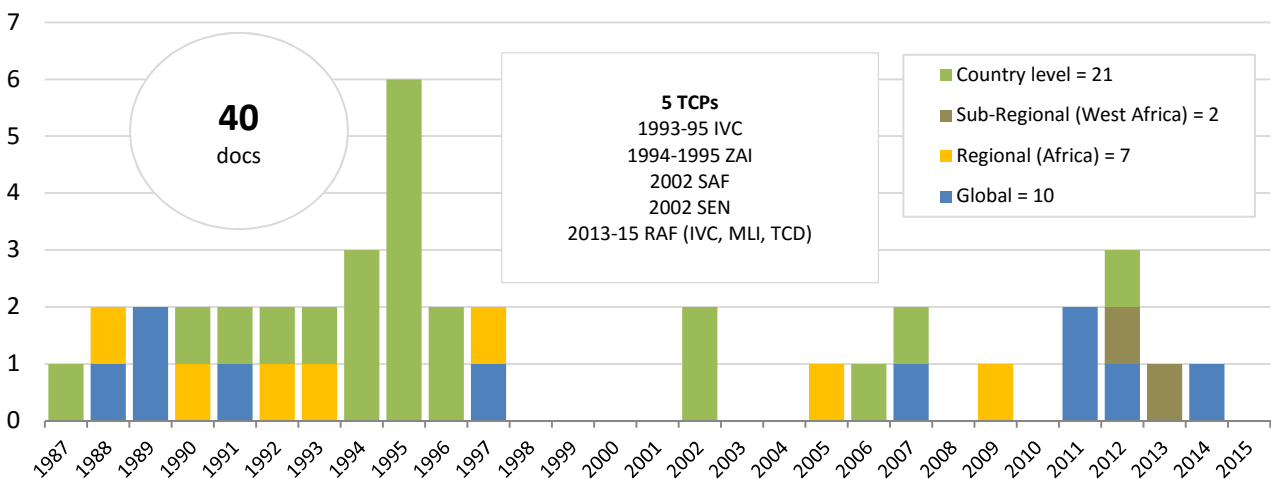
safety issues; many others analyze the socio-economic dynamics of the sector; only a few take into consideration nutritional aspects. Most studies observed street food vendors (SFVs)' hygiene and safety practices, and foods' bacteriological, physical, chemical contamination. Only a few authors focused on consumers and consumption, and even less on policy issues.

Following are the major findings from 50 key studies published between 2000 and 2015, along with the recommendations that the authors have addressed to the relevant stakeholders (mainly national and local public authorities) to improve street food safety and nutrition quality, as well as vendors' livelihoods.

Graph 1.
Scholarly Articles / Projects Reports / Proceedings from Workshops and Conferences about Street Food in Ghana (1999-2015)



Graph 2.
FAO Studies / Surveys / Reports / Guidelines / TCPs about Street Food in Africa



A. FINDINGS FROM LITERATURE

This section presents the findings of the studies under scrutiny. This will allow us to draw a picture of the phenomenon: the profile of the vendors, the characteristics of their commercial activities, the hygiene and safety conditions of foods, their nutritional quality, the related policies implemented by national and local authorities.

1. Street food vendors' profile

The number of street food vendors in Ghana is unknown. Even when official records are available, they do not include the large portion of informal, unregistered vendors. A reliable estimate of the number of SFVs operating in Accra was made by Obeng-Asiedu back in 2000, based on a socio-economic survey. According to the author, 15,000 vendors at that time operated in the capital city of Ghana, employing more than 60,000 people.

1.1 Gender and age

Considering the statistics⁶ provided by several authors for the years 2009-2015,

⁶ Twenty-three out of all selected studies (Aitken et al, 2015; Danikuu et al, 2015; Dwumfour-Asare, 2015; Dwumfour-Asare, 2015; Apanga et al, 2014; Dwumfour-Asare and Agyapong, 2014; Monney et al, 2014; Monney et al, 2014; Monney et al, 2013; Ababio et al, 2012; Ameko et al., 2012; Nicolo, 2012; Ackah et al, 2011; Annan-Prah, 2011; Odonkor et al, 2011; Otoo et al, 2011; Bobodu, 2010; Ayeh-Kumi et al, 2009; Donkor et al, 2009; Amoah et al, 2004; Feglo et al, 2004; Tomlins and Johnson, 2004; Mensah et al, 2002) provide comparable statistics on several features (e.g. Gender, Age, Education level; Hand washing

we find that females account on average for over 90% of SFVs at country level. They are usually more in medium- and small-size cities than in large cities – with a higher percentage in Kumasi and a lower percentage in Accra and Tamale.

As already noted by the doyen of street food studies, Irene Tinker (1997), in West Africa “women have a virtual monopoly over street food trade” (Otoo, 2011). The role of female SFVs in Ghana was specifically analyzed by several authors (Johnson, 2015; Otoo *et al.* 2011; Overå, 2007; IFPRI, 2003; Levin *et al.*, 1999). “The important role of women in trade in Ghana is rooted in a cultural construction of gender where men’s and women’s economic functions were separate but complementary” (Levin, 1999). As pointed out by Otoo, “self-employment in the informal sector is the sole-option for African women who have low educational levels and other challenges that result in them having fewer opportunities than men for wage income” (Otoo, 2011). Women must often “balance their roles as homemakers, mothers, and income earners” (Levin, 1999) using the business income for family needs such as food, clothing, education and health care. This may force women into jobs in which they can work at home. Street food enables them to start and operate their business enterprises by relying on small amounts of capital, traditional skills such as cooking, home equipment, and the help of other family members.

frequency, etc.) based on primary data collected from 2,886 SFVs as a whole across the Country. Such data allow us to make historical and geographical comparisons between SFVs’ demographic and socio-economic profile, their enterprises’ characteristics, and their hygienic and safety practices.



Photo: Food stall in Accra, Ghana ©FAO/FAORAF

If we look at the data on female vendors reported in earlier studies carried out in Accra (Tomlins and Johnson, 2004; Mensah *et al.*, 2002) we find that they accounted on average for a higher percentage compared to recent years. This suggests that there has been an increase in the proportion of males involved in the sector in the capital city of Ghana. This trend actually started in the 1990s, when men “increasingly performed tasks associated with food-provision that – in this part of Africa – used to be done primarily by women, such as sitting on the roadside selling small heaps of onions or tomatoes, and helping women cooking and hawking snacks and ‘street food’” (Overå, 2007: 540). In the first half of 2000s new male-dominated street food stands know as

‘check-check’ started spreading (Overå, 2007; Tomlins and Johnson, 2004): “fast-food stands (sometimes with seats) serving rice, spaghetti, chicken and salad, and other more ‘modern’ types of food” usually operated (but do not necessarily owned) by young (often well-educated) men (Overå, 2007).

We must nonetheless notice that, since “the ‘check-check’ stands operate late into the night, which is considered risky for women” (Overå, 2007: 558), there might be a statistical underrepresentation of male vendors where surveys were carried out during daylight hours only. The lack of data on the number and profile of the street vendors that operate at night does not apply only to academic research; public

authorities too show a limited ability to monitor the sector after dusk, as well as on weekends.⁷

SFVs are on average in their mid-thirties. The mean age calculated at country level is 34, with slightly older vendors in Kumasi/Center area than in Tamale/North and Accra/South areas.

1.2 Education

Looking at education levels, data show that, on average at country level, the majority of SFVs attended at least basic formal schooling; the rate is higher in Accra and in small cities in the Center (Mankranso, Bibiani, Konongo) than in Tamale and Kumasi. Accra also shows a significant increase compared to 2002.

1.3 Family status

Married SFVs usually account for the majority of vendors (between half and three-fourths), more in Kumasi than in Accra. Vendors' households have on

⁷ In 2000, AMA admitted their inspectors did not work in the evenings and weekends. The vendors Association were then used to monitor their members (Laryea, 2000: 23). Other sources (Abrokwah, 2013; Tortoe et al, 2013) reported that a monitoring system was put in place at the beginning of 2000. "As of March, 15, 2000, the Ministry of Environment started the 24-hour operation service to attend to complaints from the members of the public. Twelve enforcement officers are on duty in the morning and afternoon shifts. Another four officers take over their duties in the midnight shift until 7am the next morning. Enforcement officers attend to illegal hawking complaints that are received through the Ministry of Environment Hotline, after office hours. These law enforcement officers ensured that no hawker traded at an unauthorized place, culprits are arrested and handed over to the police who in a fast track manner process culprits for prosecution in the law courts" (Abrokwah, 2013: 117).

average 6 members in the latter city and 7 in the former one.

2. Street food enterprises

2.1 Start-up funding and overheads

Ninety-four percent of SFVs in Accra rely on personal or family money to fund the start up of their enterprises and to cover the operating costs when ongoing revenues are too low. The majority of SFVs say they do not consider borrowing capital from banks and microfinance companies mainly because of cumbersome procedures and relatively high interest charged on the amount borrowed (Nicolò, 2012; Otoo, 2011; Bobodu, 2010).

Limited access to credit is a major barrier to the growth of the street food enterprises, and a major factor of stagnation of the whole sector. Half of the vendors interviewed by Bobodu believed that when the government and institutions like the banks facilitate credit for them, it will aid in their expansion. This is because when more money is pumped into their businesses, it enables them to enjoy economies of scale which will further increase their profit. Where credit has been accessible to street food entrepreneurs, there has been an "enviable record of success" in their enterprises. However, presently, there are very few African countries where NGOs have made efforts to give working capital loans to street vendors. Government policies such as mandating interest rate caps create barriers to microfinance providers (Otoo *et al.*, 2011).

2.2 Length of service

On average, SFVs have been engaged in SF vending for 8 years in large cities (8 years in Accra; 10 in Kumasi; 5 in Tamale), and about 6 years in medium and small cities.

As pointed out by Nicolò, “[t]his is a noteworthy amount of time considering that vendors cannot rely on any kind of social security programme and operate almost completely out of the formal tax system. It also suggests that, the sector does not only represent a temporary source of income but becomes the main and longstanding employment option for the most vulnerable groups, who tend to remain in the street food vending, as mentioned by one of the vendors interviewed, until their health allows them to carry out the activity” (Nicolò, 2012: 21).

A study by Boakye (2011) on street vendors and hawkers in general shows that none of them wanted to do street vending for a living; most of them see such activity as a temporary way to acquire money quickly to support their education or further professional training, or to buy a shop. Nonetheless, their attempts to move to a new stage of their life are often frustrated by objective limits (e.g. Inability to save money given the meager earnings) and erroneous strategies (e.g. some claim it is the responsibility of the government to provide them with opportunities for growth, and thus expect opportunities to come their way). Therefore, most street vendors and hawkers end up staying in the street and, as found by Asiedu and Agyei-Mensa (2008), rather than shifting from street vending to other livelihoods, they progress amongst trades over time, in terms of the types of goods which the

vendors trade in: a shift to higher value items takes place as traders build up capital.

2.3 Working hours

SFVs in Accra work on average 10 hours per day. As pointed out by Overå, “men work both shorter and longer hours than women, and more men work late into the night and seven days per week [while women usually have one day off per week]. Thus, even if men do not necessarily earn more per hour than women, they have more flexibility than women in how to dispose of their time, and thus are able to compensate for low turnover and profits by working longer hours. It is mainly child care and cooking duties that limit how much of the day, night and week women can work away from home” (Overå, 2007: 550-51).

2.4 Employment

SFVs are mostly micro-entrepreneurs rather than dependent workers, providing employment not only for themselves but also for other people who would otherwise be unemployed. SF enterprises with employees account for 38% of all enterprises in Accra (Nicolò, 2012) and 28% in Kumasi (Otoo *et al.*, 2011). In both cities, enterprise employ on average 3 people. “Women street food based entrepreneurs often utilize labor from family and friends who may or may not receive direct payments” (Otoo *et al.*, 2011: 49).

2.5 Revenues

Enterprises operating in Accra have an average income of 44 GHC per day, slightly higher than those in Kumasi (40

GHC). “Differences between vendor earnings and formal sector living standards are significant, with average vendor earnings about five times higher than the official minimum wage earned by public sector workers⁸.

Otoo *et al.* (2011) found that entrepreneurial success (size and profit) is negatively related to lack of financial resources, seclusion (obligation to conduct business at home), location insecurity and instability. Regression also shows that enterprises that operate in high income neighborhoods are more successful. Contrary to much of the business literature, higher educational levels are not associated with more successful enterprises. The reasoning for this phenomenon is that individuals with higher levels of education may be waiting for better opportunities and have no incentive to invest and expand their businesses.

Interestingly, two studies pointed out the importance of religious beliefs in affecting the business practices of SFVs in Ghana. Otoo *et al.* (2011) found that family support is central to the operation of most street food enterprises, particularly where religious beliefs dictate the manner in which women entrepreneurs conduct their business, that is, when their religious beliefs set the boundaries within which they are allowed to operate. Bobodu (2010) discovered during the data collection that most of the street food vendors attributed their

stagnation in operation to religious beliefs, stating that their success or failure is up to God.

Most of the revenues earned by SFVs in large cities are used to support their family needs (food, clothing, housing, etc.). A fair amount of the revenues is channeled into the education of children. Only a small portion is reinvested into the business itself (either to buy ingredients for the following day or to develop its equipment). Good part of the revenues is rather saved by SFVs. Almost all of the SFVs in Accra (96%, according to Bobodu, 2010) are indeed able to save money. In Kumasi the percentage is lower (57%) according to Otoo *et al.*, (2010) but still significant. Savings range on average between one-fourth and on-third of the daily income, and are usually higher in more developed neighborhoods (e.g. Labone and Osu in Accra). Only a small percentage of vendors opt for depositing money in the bank, while the majority rather entrusts their savings to Susu collectors⁹ (Osei-Boateng, 2012; Osei-Boateng and Ampratwum, 2011; Bobodu, 2010; Alfors, 2006) claiming that it is cheaper than bank service. Some vendors keep savings at home since it makes it more convenient for them to have access to their funds as and when it is needed.

According to the head of Fan Milk Vendors Academy – where vendors of Fan Milk products are trained in Business Management – the fact that SFVs do not

⁸ On January 2016, the Ministry for Employment and Labour Relations set the National Daily Minimum Wage for all public sector workers to GH¢ 8.00.

(<http://ghana.gov.gh/index.php/media-center/news/2023-government-announces-increment-in-minimum-wage-salaries-for-public-workers>)

⁹ *Susu* collectors are a traditional form of financial intermediaries in Africa, predominantly in Ghana. For a small fee they provide an informal means for Ghanaians to securely save and access their own money, and gain some limited access to credit, a form of microfinance. Money looked after for an individual by a *Susu* collector is held in a *Susu* account.

deposit their money in the banks is due not so much to a debatable question of affordability (indeed, if entry fees are lower, entrusting money to Susu collectors does not generate interests), but rather to the idea they often have of the banking system as suited to handle large sums of money, not their small gains.

2.6 Licensing

In several studies, SFVs were asked whether they held a formal vending license issued by public authorities enabling them to legally operate. In all cases, the percentage of those claiming they held a license was much higher (usually half and above) than the percentage of those who were actually able to prove their claim by providing documentary evidence (on average less than one fourth, with higher rates in small and medium cities of Center area, and lower rates in Accra and Tamale) (Dwumfour-Asare, 2015; Dwumfour-Asare and Agyapong, 2014; Nicolò, 2012).

In most cases, the fact that SFVs claim to have a formal license without being able to prove it, should not be interpreted as a mendacious act, but rather as a miss-understanding of what “being licensed” means to vendors. Indeed, as we look at the statistics reported by three different studies (Nicolò, 2012; Ackah *et al.*, 2011; Annan-Prah *et al.*, 2011) we find that the percentages of SFVs who claim to have a license (respectively 83%, 42%, and 54%) overlap to a great extent with the percentages of SFVs providing a medical certificate (respectively 67%, 40%, 55.5%). This suggests that maybe vendors consider such document (which

is required in Ghana in order to obtain a license to trade in foods) enough to be entitled to operate.

2.7 Associations

Only between 3% and 5% of SFVs in Accra are found to be members of vendors associations or unions (Nicolò, 2012; Bobodu, 2010). The low rate of participation of SFVs in associations is due to the fact that these latter ones often lack clear organizational goals (Nicolò, 2012) and have weak governance and funding (Karg *et al.*, 2010).

Nonetheless, most of the vendors think associations are needed to provide financial support and defend vendors interests (Nicolò, 2012).

3. Consumers and consumption practices

In 2000, Maxwell *et al.* found that urban consumers in Accra purchase a wide variety of foods away from home to meet their needs throughout the day. The majority of these foods are found on the street, including snacks, breakfast foods such as porridge, and lunches, which generally consist of a prepared staple food dish and a soup or stew. Almost all households purchase some prepared food away from home, and a number of households are almost totally dependent on street foods.

Who patronizes street food in Ghana? What foods are mostly consumed? How often? What reasons drive the consumption of street food? While the great majority of the studies focus on vendors, very few take into consideration customers and their practices: some outlined the socio-demographic profile of

consumers and analysed the factors shaping consumption practices (Hiamey *et al.*, 2015; Mensah *et al.*, 2013; Nicolò, 2012); others studied the knowledge and perception that consumers have about street food safety (Haleegoah *et al.*, 2015; Mensah *et al.*, 201; Rheinländer *et al.*, 2008); others calculated the nutritional intake deriving from street food consumption (Micah *et al.*, 2012; Maxwell *et al.* 2000).

3.1 Consumers' socio-economic profile

No statistical data is provided in literature about the personal and socio-economic profile of people patronizing street food in general in Ghana. A recent survey conducted by Haleegoah *et al.* (2015) in Accra, Kumasi and Tamale is the study with the widest geographical scope, but focuses on a sample of consumers patronizing three specific street foods only – namely Hausa Koko, Waakye and Ga Kenkey. The study shows that about 64% of them were males whilst 36% were females, mostly (68%) between ages 21 and 40. Three-fourth (75%) attended Senior High School (SHS) or tertiary education and had diverse occupations (e.g. government or salaried workers, traders, artisans, students, farmers and others).

Another study, by Hiamey *et al.* (2015), observes consumers patronizing all types of street food but has a narrower geographical scope, as it focuses on the Market Circle area of Takoradi, the capital city of Western Region. Findings show that more than half (54.1%) of the respondents were females (as the majority of people who commonly operate in African markets are females), singles (57.3%) and below 35 years (60.5%). With regard to educational attainment,

the data found by Hiamey are in line with the findings by Haleegoah *et al.*, showing a high rate (44.5%) of people who attended SHS, plus 10% with tertiary education. Consumers with junior high education accounted for one third (30.5%) of the sample. As of the occupational background of the respondents, apart from the clear preponderance of traders (62.3%) among consumers due to the specific location of the survey, the occupational background of the respondent (12.7% professionals, 10.9% artisans, 10.9% students, 3.2% civil/public servants) as well as their income (57.3% of the respondents indicated that their monthly income was within the GHC100–399 bracket) was consistent with the observation made by Haleegoah as well as by several other authors such as Nicolo (2012), who noted that consumption of street food does not only concern the urban poor but cuts across all socio-economic strata, especially in urban areas, and Tinker (1997), according to whom street foods provide an essential source of inexpensive ready-to-eat food for workers of every class and occupation.

Rheinländer *et al.* (2008) detected that in Kumasi the majority of consumers were students, unskilled workers, or workers of low educational levels. We are not sure, though, whether the authors meant that these groups accounted for the highest percentage of consumers (in this case, this finding would be slightly in contrast with the more recent studies), or rather that they eat street food more frequently than others (in which case, as we shall see shortly in the “*Frequency of Consumption*” paragraph, the finding of Rheinländer *et al.* would be in line with the other studies).



Photo: Food stall in Accra, Ghana ©FAO/FAORAF

3.2 Frequency of consumption

In relation to the frequency of consumption, Haleegoah *et al.* (2015) found that at the national level 35% of consumers patronized Koko every day, 28% eat Waakye twice a week, while 26% consumed Kenkey once a week. More than half of the consumers had been eating these three foods for 20 years or more. Consumers at Tokaradi's market were found eating street food more often, on average 6-7 times a week, according to Hiamey *et al.* (2015). The two statistics, though, cannot be compared, as the highest frequency recorded in the latter study is likely due, first of all, to the fact that the basket of foods considered in this second study is broader than the one observed in the first study; secondly, while the sample considered in the first study included

random consumers, the majority of consumers sampled in the second study consisted of market traders who live every day closely to the street food vendors who operate within the same market's premises.

As of the relation between frequency of consumption, on one side, and socio-economic profile of consumers, on the other side, Hiamey *et al.* (2015) found that whereas the males eat street foods about eight times in a week, their female counterparts did so six times within the same period. Individuals with tertiary education reported consuming street foods less frequently (4 times per week) compared to the members with lower levels of education (7-8 times per week). Street food consumption was much higher (7 times per week) among individuals who earned GHC100–399 per

month compared to the other income groups. Unmarried people, market traders and Akans all consumed street foods more frequently (7 times per week) than others.

These findings are consistent with those showed by Mensah *et al.* (2013) who studied street food consumption practices of a sample of households in high, medium and low income areas in Kumasi metropolis. Here, like in Tokaradi, males (especially unmarried ones) were more likely than females to eat street food. In Kumasi like in Tokaradi, educational and income level were negatively correlated to a significant extent with street food consumption. Mensah *et al.* also found that people who spend more time out of the house, younger cohorts, people who live in smaller households and unemployed people consume more street food.

Thirteen years earlier, Maxwell *et al.* (2000) found similar trends, showing that, apart from street food vendors themselves who consumed more street foods than any other group, the main street food patrons were found among unemployed and casual labour – occupational groups that have some of the lowest incomes. Moreover, according to the same authors, school children largely relied on street foods too to meet a large share of their daily food requirements; indeed, principal homemakers interviewed estimated that of their monthly allocation of money for street foods, 51% was spent by or for children.

Regarding the specific case of school children, Nicolo (2012) detected when pupils/students eat street food more frequently (although she does not provide data on the frequency of consumption,

but rather indicates in which moments of the day pupils/students are more likely to eat street food); she found that the meals consumed by pupils/students from street food vendors strongly prevail over those consumed at home from Monday to Friday, with breakfasts and lunch being the mostly eaten outside of the households, while dinner is usually eaten at home. Consumption of street food by pupils/students drastically drops after schooling hours, approximately around sunset.

Besides the individual profile (age, gender, education, occupation, income, etc.), street food consumption frequency is also related to households' characteristics, including whether women in the household work, the kinds of time constraints that affect principal homemakers, income fluctuations, proximity to markets, and household demographics (Maxwell *et al.*, 2000)

3.3 Expenditure on street food

In 2000, Maxwell *et al.* found that among households in the lowest expenditure quintile in Accra, 39% of the total food budget went to purchasing snacks and meals away from home, more than the households in the highest expenditure category, which spent about 25% of their total food budget on street foods. One and a half decades later, the negative correlation between households' income and their street-food related expenditure rates is confirmed by Mensah *et al.* (2013) who found that in Kumasi high income groups spent 9.5% of their total food expenditure on street food as compared to those in the middle (17%) and low (22%) income groups, with low income groups spending more (GH 85) on street food than those in the middle

(GH 69) and high (GH 45.5) income groups on the average per month.

The majority of pupils/students interviewed by Nicolo (2012) got between GHS 1 and 2 which is considered to be enough to purchase one of the main meals (either breakfast or lunch).

3.4 Reasons for consumption

According to Hiamey *et al.* (2015), the main reason driving consumers to patronize street food is “convenience” (as declared by 70% of the sample) that is, the availability and accessibility of street foods over space and time. Indeed, in large urban areas there are so many street food vendors operating round the clock that consumers can always find one within reasonable distances. Among the specific reasons offered under this domain were: reduced difficulty of preparing food, time saving, and lack of alternative. These data confirm the findings of previous studies. Mensah *et al.* (2013), for instance, found as well that street food accessibility was the main factor motivating consumers to buy it, with a significant percentage of the sample declaring they have no time to prepare food at home. Saving time was the main reason for consumers to increasingly rely on prepared foods and snacks already one and a half decades ago, according to Maxwell *et al.* More recently, Haleegoah *et al.* (2015) noted that most of the females who patronized street food were buying and taking it away instead of consuming it at the sale point, suggesting that also for them the main reason for buying street food is convenience, as by doing so they are still able to provide prepared food to their family while engaging in paid activities outside the house, making the most out

of the time that they traditionally spent cooking. Men (especially single ones) find it convenient to patronize street food frequently mainly because they often lack culinary skills (Mensah *et al.*, 2013). Finally, convenience was found by Nicolo to be the main driving reason also among the specific group of pupils/students, as they often have no other alternative due to the lack of time and means to go back and forth from home to the school.

After “convenience” (in all its forms), Hiamey *et al.* found “sensory appeal” (e.g. better taste, hunger) as consumers’ second driving reason (14.0%), followed by nutritional value (e.g. opportunity to select from varied local dishes, opportunity to obtain a balanced diet) (7.3%). This data is in line with Nicolo’s study, as more than one third of the students declared they relied on street vendors as they provide food which is not available at home.

Finally, while Hiamey *et al.* (2015) found that cost advantage appealed only to 6.0% of the sample in the market of Tokaradi, in Kumasi the percentage of consumers who choose to buy street food because it is relatively cheaper is much higher: 30% according to Mensah *et al.* (2013), and the totality of the sample, according to Rheinländer *et al.* (2008). This data seems to show that over the years consumers have been less and less interested in price when it comes to buy street food.

4. Street food and nutrition

While the number of publications focusing on street food hygiene and safety is quite large (see the following paragraph “Street Food Hygiene and Safety Conditions”)

those focusing on street foods from a nutritional point of view are just a few.

4.1 Food and Beverages on Sale

Some studies report lists of foods and beverages on sale in the streets of Ghana.¹⁰ Some of them provide percentages of the vendors selling specific foods. Nicolò (2012), for instance, found that the most common street foods sold in Accra are fried ones, both fried fish (sold by 40% of the SFVs sampled) and fried chicken (14%) as well as fried yam (12%). These are accompanied by banku (14%), bread and sausages (13%) or bread and eggs (12%). Other common foods are fruits (with seasonal variations) such as oranges (7%), bananas (5%) and mangoes (4%). Only one fourth of the vendors sampled sold snacks. Twenty-two percent offered soft drinks. Twenty percent were serving dinner: the most common dishes sold in the evening are banku and fried fish (13%) and fried yam (10%).

Ackah *et al.* (2011) reported a different menu: tomato stew and banku turn out to be the most commonly sold foods (respectively by 56% and 44% of SFVs), followed by rice (38%), groundnut soup (34%), fried plantain (32%), palmnut soup (30%), light soup (24%), fufu (22%), waakye (20%), spaghetti / macaroni (20%) and meat pie (20%). The most commonly sold beverage is sachete water (44%), followed by bottled soft drinks (38%), bottled water (36%) and fruit juices (36%).

Bobodu (2010) clustered foods into categories, and he found that one third

¹⁰ For a list of common Ghanaian street foods, see *Table 1* at page **

(29%) of SFVs in Accra sold rice/waakye/beans, 26% maize-based foods, 16% beverages or snacks, 11% roasted plantain/yam, and 8% boiled plantain/yam.

More recently, Dwumfour-Asare (2015) provided data on three different clusters of foods sold in Kumasi area: half of the SFVs (51.5%) sold sauce/stew-based food, one-fourth (26.5%) soup-based food, one-fifth (21.5%) beverages.



Photo: Grilled fish at a food stall in Accra, Ghana
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4.2 Commonly consumed foods and beverages

Hiamey *et al.* (2015) and Nicolo (2012) provide statistics on the foods that are commonly consumed, respectively, in a market in Tokaradi and by pupils/students

at primary schools, Junior High Schools (JHS) and Secondary High Schools (SHS) in Accra. The first study shows that the most popular street food among the people who, for various reasons, attend the market, was rice with stew/bean sauce (23.5%). This was followed by banku/etsew with stew/okro/pepper sauce (17.5%), fufu/kokonte with soup (14.4%), fried rice (1%), tuozaafi (0.7%) and akyeke with tilapia (0.3%). Omo tuo (0.3%) appeared to be the least popular food. The level of fruit consumption appeared to be low as only 2.4% of the consumers ate this type of street food.

The second study shows that pupils/students' favourite street food for breakfast is porridge (13%) of different kinds ("rice water" porridge and "tom brown" porridge made of toasted maize flour) served with sugar (or condensed milk), alone or accompanied with koko. Tea (local way of calling a hot beverage, such as cocoa diluted in water) comes second (12.5%), frequently accompanied with bread (10%), plain or smeared with margarine or sugar. For lunch, the most popular consumed dish is tomato stew (12%), eaten with banku or dishes made with rice such as waakye and jollof rice. For dinner, the main dishes are those from the traditional Ghanaian cuisine such as banku, fufou and yam served with tomato stew. As of snacks: pastries are the favourite ones, followed by ice cream. Only very few consume fruits (mostly cocoa, then orange, banana, and papaya). Soft drinks (16%) are the most consumed beverage, followed by juice (9%) and sachet water (7.5%).

4.3 Nutritional intake and quality

Overall, as recently noted by Hiamey *et al.* (2015), there seemed to be a

penchant for carbohydrate staples over other types of foods sold in the streets in Ghana, mainly because of their low cost, availability and ease of preparation.

The first key study on the nutritional role and quality of street food in Ghana dates back to twenty years ago. In 1996, IFPRI started a program of research on urban challenges to food and nutrition security to better understand trends in urban poverty, food insecurity, and malnutrition and their determinants and interrelationships. The outcomes of the research (published in 2000 by Maxwell *et al.*) showed that urban residents tended to rely heavily on street foods and meals purchased away from home, and that a large share of total calories came from these prepared foods. The mean calorie share for street foods or prepared meals purchased away from home was 27 percent for the entire sample. The total amount of calories obtained from street and other prepared foods was significantly higher for households in the lowest income group, accounting for just over 30 percent of total calorie availability. Indigenous households obtained significantly more of their calories from prepared foods than migrant households, and female-headed households had higher calorie shares from these foods than male-headed households. Calories from prepared meals accounted for almost 62 percent of all calories purchased away from home (Maxwell *et al.* 2000: 70-71)

A second, more recent study by Micah *et al.* (2012) analysed the contribute of street food to nutrient intakes among children from rural communities in Winneba and Techiman municipalities. The authors found that about 80% of caregivers purchased street food for their child at least once that previous week.

Most (76%) of street food purchased were grain-based and were purchased as complete meals. Overall, SF contributed 35% of energy, 43% of vitamin A, 20% of vitamin B12, 30% of zinc, 34% of iron, 54% of calcium consumed by children. As shown by an Ag Bendeche *et al.* (1998) seminal study on street food and dietary intake, the dietary contribution of street food is most important for children of poor families, especially those whose mothers are involved in trading food at the roadside, Adults resort less frequently on street food.

The most recent study on street food and nutrition was published by Aitken *et al.* (2015). The authors shift their attention from consumers' intake to vendors' food offer, analysing data from a large sample of 700 SFVs. They find that 32% of SFVs in Ghana sell fruit and vegetables (FV) (solely 23%; combined 9%). Less than 3% of SFVs in Ghana were aware of the recommended daily amount of FV to be consumed (i.e. 5 servings). Fifty-eight percent didn't know, followed by 17% who suggested 3 servings. Four fifth (80.4%) declared that the main reason for selling FV was the high demand for these foods. Thirty percent were willing to develop and sell more FV. SFVs stated they were willing to increase the supply of fruit and vegetables to promote consumers' health

improvements, should the customers themselves demand more availability and access to such products.



Photo: Fruit at a food stall in Accra, Ghana
©FAO/FAORAF

Table 1. List of street foods commonly sold in Ghana

FOOD	DESCRIPTION	MAIN INGREDIENTS	COOKING METHOD
AKYEKE	Akyeke originally from Côte d'Ivoire "Ivory Coast" is the name given by the people from Ghana from the real name Attieke From the Ebrié Lagoon people located in Ivory Coast and now some borders in Ghana. However, during the late nineteenth century a lot of Ghanaian merchant traders came in from Ivory Coast to do business. Today, Akyeke is cooked a little differently to the traditional Ivorian people which is why Akyeke is a well known dish, a Ghanaian delicacy which is prepared by people in the western Region of Ghana today. It is made from grated cassava that is fermented, and is flavourful when eaten with fried fish with ground pepper garnished with chopped pepper and onion with a little seasoning for taste added with palm oil to give it a yellowish look and different taste. One can also eat akyeke with smoked fish and stew. It can be served with soup too depending on one's preference.	2	Fermentation
BANKU	Banku is a Ghanaian dish which is cooked by a proportionate mixture of fermented corn and cassava dough in hot water into a smooth, whitish consistent paste. Served with soup, stew or a pepper sauce with fish. It is mostly preferred by the people of the Southern Regions of Ghana particularly the Ga tribe but also eaten across the other regions in Ghana. Banku is found throughout Ghana, and is one of the staple foods in the country.	1, 2	Fermentation Heating with continuous stirring
BEANS STEW	Cooked beans.	12	Boiling
BOFROT (BUFFLOAF) (PUFF PUFF) (DOUGHNUTS)	Bofrot as it is called in Ghana or Puff-puff Nigeria is a traditional African snack similar to a doughnut. There exists a similar version known as Mandazi or Mandasi in Eastern and Southern Africa. Puff-puffs are made of dough containing flour, yeast, sugar, butter, salt, water and eggs and deep fried in vegetable oil until golden brown. Variations can be made in the recipe by using baking powder in place of yeast but yeast is more common. After frying, puff puffs can be rolled in sugar or in any spices/flavouring such as cinnamon, vanilla and nutmeg. Bofrot can be taken with juice as lunch.	1, 10, 13	Frying
BREAD (plain or with creams)	Some vendors offer bread, plain or with sweet or savoury creams (e.g. chocolate, jam, butter, peanut butter, cheese).	1, (6), (7), (13)	No cooking
CHICKEN	Fried or grilled chicken.	9, (14 when fried)	Frying or Grilled
CHOFI	In the region of Accra people turkey tail (chofi) with yam. This meal is flavored with spicy ground pepper and served with beverages like the coconut juice, akpeteshie liquor and palm wine.	2, 9, 14	Fried
FISH	Dried, fried, grilled, smoked fish.	11, (14 when	Frying or Drying or

	The most common fish in Ghana is Tilapia: one of several commercially important aquaculture species (including trout, barramundi and channel catfish) susceptible to off-flavours. These flavours are no indication of freshness or safety of the fish, but they make the product unattractive to consumers. Simple quality control procedures are known to be effective in ensuring the quality of fish entering the market. Tilapia have very low levels of mercury, as they are fast-growing, lean and short-lived, with a primarily vegetarian diet, so do not accumulate mercury found in prey. Tilapia are low in saturated fat, calories, carbohydrates and sodium, and are a good protein source. They also contain the micronutrients phosphorus, niacin, selenium, vitamin B12 and potassium.	fried)	Grilling or Smoking
FRUIT	The most common fruit sold in the streets in Ghana are papaya, banana, pineapple, mango, apple.	6, 7	No cooking
FUFU (SAKARA)	Fufu is a staple food with deep roots in Ghana's history and common in many countries of West Africa and the Caribbean. It is pounded cassava with plantain, cocoyam or yam. Other flours, such as semolina, maize flour or mashed plantains may take the place of cassava flour. Fufu, served alongside soup, usually groundnut soup, is a national dish of Ghana.	2 (or 1)	Boiling and pounding
GARDEN EGG STEW	Ghanaian dish made with eggs, tomatoes, onions, ground red peppers, dried herrings, meat, ground dried shrimps, ground, palm oil, ground garlic. It is served with baked plantains or steamed rice.	3, 4, 5, 9, 10, 11	Frying Boiling
GARI (or GARRI) (dry or wet)	Garri (also known as gari, garry, gali, or tapioca) is a popular West African food made from cassava tubers. Garri can be eaten without further cooking, as a snack, by placing it in a bowl and adding cold water; ijebu-garri is made to have finer grains, and a pleasantly sour taste, making it very suitable for consumption in this way. Sugar or honey is then added as well as chunks of coconut, groundnuts, tigernuts and cashew nuts. Milk may also be added. Most garri, however, is cooked by adding it to boiling water and stirring to make a stiff paste or porridge.	2	Dry or water added
GROUNDNUT SOUP	Same as light soup, with peanut butter added. This Ghanaian recipe soup is usually served with Fufu, an Akan dumpling made from yams, plantains, cassava or even processed potato flakes. The Fufu should sit like an island in a sea of soup. This is a dish that is traditionally eaten with your fingers.	3, 5, 9 (or 11), 10, 12	Boiling
HAUSA KOKO (Millet Porridge)	The Hausa people are found in a diverse number of countries extending from Sudan to Nigeria. They have had a great influence in the food culture of West African street foods. One such food is Hausa koko, a popular street food often eaten for breakfast, a sweet, soured and spicy (ginger and chilli pepper) smooth millet flour porridge. It has a greyish brown colour.	1, 2	Boiling
KEBAB	Meat or liver grilled on skewers.	8, 9	Grilling

KENKEY (KORMI) (KOKOE) (DORKUNU) ICE KENKEY	Kenkey is fermented maize dough dumpling; a staple dish similar to sourdough dumpling from the Ga, Akan and Ewe inhabited regions of West Africa, usually served with soup, stew, or sauce. Meshed Kenkey with cold water and evaporated milk and sugar is called ICE KENKEY.	1, (13)	Fermentation . Wrapped in corn husk or plantain leaves and boiled
KOKO (AKASA) (Maize Porridge)	Maize porridge.	1	Boiling
KOKONTE	Kokonte is a delicacy which is eaten some parts of Africa like Togo, Ghana and others. In Ghana to be precise Kokonte is eaten by most of the ethnic groups like the Ga, Akan, Hausa and so on. Most people like to refer to Kokonte as “Face The Wall” because of the way it looks and this is the popular term mostly used by the Ghanaian locals. Kokonte usually is brown, grey and deep green depending on the type of ethnic group that prepares the delicacy. Kokonte is usually prepared out of dried cassava or yam.	2	Boiling and stirring
KONTOMIRE or NKONTOMRE (COCOYAM LEAVES) STEW	Gravy made with onions, tomatoes, pepper and vegetable oil, fish and Nkontomre (or Kontomire) the name given to Cocoyam leaves or taro in Ghana. Taro which is a source of vitamins A and C is also native to other countries in Africa such as Nigeria (biggest producers in the world), Kenya, Uganda and Tanzania. In Egypt they are called kolkas and in Europe it had been used since Roman times. Kontomire stew, however, is as Ghanaian as Ghana’s Kenkey even though Nigeria and other countries have similar versions of this tasty stew. Boiled yam, ampesie (boiled plantain), rice, garri all go with Kontomire stew. The texture of this stew, the infused flavours from the assortment of ingredients and spices gives it a uniquely savoury taste.	3, 4, 5, 14	Stewing
KOOSE (AKARA)	Fried bean cake. Koose is a street food in Ghana, and a similar variation is more popularly known as akara in much of West Africa. the origins of koose or akara are linked to the Hausa people. Koose (kosai, akara, akla) is made from ground cowpeas or black eyed peas.	12, 14	Frying
LIGHT SOUP	Mixture of vegetables, fish or meat and eggs boiled in water	3, 5, 9 (or 11), 10	Boiling
MEAT PIE	Flaky pastry filled with minced beef, onions and green peppers, meat pies are a popular Ghanaian snack.	1, 5, 9	Frying
NKATEBE SOUP	A combination of palm nut soup and groundnut soup	3, 5, 9 (or 11), 10, 12, 14	Stewing
NKATENKONTO SOUP	A combination of groundnut soup with Kontomire soup	3, 4, 5, 9 (or 11), 10, 12, 14	Stewing
NKATENKONTOB	A combination of groundnut soup, Kontomire soup and	3, 4, 5, 9 (or 11),	Stewing

E SOUP	palm nut soup.	10, 12, 14	
NKATE CAKE (Peanut Brittle)	In Ghana, a popular snack is what we would all know in English as peanut brittle. In the West African country, they go by the name "nkate cake". Peanuts are known in the local Twi language as nkate or in Ga as nkatie. And thrown together with caramel, the resulting slab is referred to a peanut cake. These are sold by street vendors as a popular snack and are so cheap that it is uncommon for anyone to have to make these at home. As the English name suggests, they are quite brittle to bite and also sticky to chew.	12	Frying
OKRA SOUP	Same as light soup. Okra and palm oil added.	3, 5 (or 11), 10, 14	Boiling
OMO TUO	Boiled rice dumpling, Omo tuo is a Ghanaian staple food. The rice is usually cooked with more water than usual to make it softer. It is then beaten a little to make it smooth and shaped into sizable balls. Its English designation is thus "Rice Balls." [1] It is usually served with tasty soup made of groundnut or palmnuts. It's a Ghanaian delicacy enjoyed by all people groups most notably Akans, who coined its name.	1	Boiling and stirring
ONE MAN THOUSAND	Cooked Shrimps and fried Tanganyika sardine.	11	
PALM NUT SOUP	Same as light soup. Palm nut puree added	3, 5, 9 (or 11), 10, 14	Boiling
RED PEPPER	A Ghanaian delicacy, mainly an accompaniment for Banku and Kenkey.	5	
RED RED	Red Red is a popular Ghanaian bean and meat stew served with fried ripe plantain and often accompanied with gari and avocado. It earns its name from the palm oil that tints the bean stew and the bright orange color of the fried ripe plantain.	7, 9, 12, 14	Boiling
RICE	Rice can be plain, fried, Jollof	1 (14 when fried)	Boiling or Frying
RICE PORRIDGE	Rice porridge.	1	Boiling
SHITO (SHITOR TSULU - Red Shito) (KPAKPO SHITO - Green Shito)	Shitor Din, commonly called Shito, is the word for pepper in the Ghanaian native language (Ga) of the capital Accra. Whilst the word for pepper is different for each of the Ghanaian native languages, the word 'Shito' is widely used as the name for the hot black pepper sauce ubiquitous in Ghanaian cuisine. Shito sauce consists primarily of fish or vegetable oil, ginger, dried fish, prawns, crustaceans, tomatoes, garlic, peppers and spices. The blend of spices and fish differs between different regions and villages but owes its original recipe to the Ga tribe. In Ghana, shito is used with a variety of dishes. These include kenkey, steamed rice, eba and waakye (rice and beans). Indeed its uses have been adapted to that of a	2, 3, 5, 11, 14	Mashing, frying

local ketchup or chili oil. It is not uncommon to find shito being eaten with white bread or spring rolls. In most Chinese restaurants across Ghana, shito replaces hot oil as a condiment to fried rice.

Shito is not always hot black pepper and it can also be prepared without the use of oil. The ingredients for this type of shito are fresh pepper, onions, tomatoes and a little salt mashed together in an earthenware bowl popularly known as 'asanka' and a pestle. The colour of the resulting sauce is red (shitor tsulu) or green (kpakpo shito) depending on the colour of the pepper used. It can be eaten with banku, akple, gari, kenkey and steamed rice.

TOM BROWN (Corn Poridge)	In Ghana, mothers conventionally fed their children complementary foods made with flour from cereals. A common mix made with roasted corn is known as Tom Brown (once called "Ablemam" in local Ga dialect). But the purely corn flour based Tom brown need to be modified to add proteins when used as weaning for infants. The Ghana Health Service and UNICEF began teaching women's groups how to make a modified weaning food recipe during the 1980s: the new mix combined 4-parts cereal (maize) and 1-part legume (soybeans, cowpeas, and groundnuts). The legumes added protein crucial to infants' health." (see also Nagai <i>et al.</i> , 2009)	1	Boiling
TOMATO STEW	Gravy made with onions, tomatoes, pepper and vegetable oil. Fish, meat or chicken added	3, 5, 9 (or 11), 14	Stewing
TUO ZAAFI	Tuozaafi is a popular main dish in the Northern Region of Ghana. The dish consists primarily of cooked maize dough plus a little dried cassava dough and water without salt .It is mainly eaten with green vegetable soup made from bitter leave or sometimes, freshly pounded cassava leaves.	1, 2, 3	Boiling
TALIA (MACARONI) (SPAGHETTI)	Called talia in Ghana, macaroni or spaghetti are extruded wheat flour doughs, and make a common addition to rice and beans.	1	Boiling
WAAKYE (WACHE)	Waakye is a Ghanaian dish of cooked rice and beans. It is commonly prepared in the home, but is also sold by roadside vendors. It is prepared by boiling the beans and rice together. It is mostly eaten for breakfast or lunch. A typical waakye meal usually consists of the cooked rice, and beans, stew, some spaghetti and moist gari (both of which are sometimes mixed with oil from the stew), boiled eggs, stewed meat or stewed/fried fish, stewed wele (cooked-down cowhide) and vegetable salad (which may include cabbage, onions and tomatoes). It may also be eaten with Kelewele, fried plantain, fried chicken. It is thought to have originated from the northern parts of Ghana.	1, 12	Boiling
PLANTAIN (KOKO A Y'ATOTO)	Boiled, roasted or fried plantain. Roasted ripe plantain are called KOKO A Y'ATOTO . Fried plantains are called KELEWELE . It is a popular Ghanaian snack dish of fried plantains seasoned with spices. In English, it is sometimes called Hot Plantain Crisps. In Africa, kelewele is sold by	7, (14 when fried)	Boiling or frying or roasting

(KELEWELE) street vendors, usually at night. It is sometimes served with rice and stew, peanuts, or alone as a dessert or a snack. Kelewele is also popular for breakfast.

YAM	Boiled, roasted or fried yam.	2, (14 if fried)	Boiling or frying or roasting
SWEET POTATOES	Fried sweet potatoes.	2	Frying
SALAD	Mixture of fresh vegetables	3, 4, 5	

Ingredients

1	CEREALS	<i>corn/maize, rice, wheat, buckwheat, barley, oat, noodles,</i>
2	WHITE ROOTS AND TUBERS	<i>white potatoes, white yam or other foods made from roots</i>
3	VITAMIN A RICH VEGETABLES AND TUBERS	<i>pumpkin, carrot, + other locally available vitamin A rich vegetables e.g. red sweet pepper</i>
4	DARK GREEN LEAFY VEGETABLES	<i>dark green leafy vegetables, including wild forms + locally available vitamin A rich leaves e.g. kale, spinach Dills, Coriander</i>
5	OTHER VEGETABLES	<i>tomato, onion, eggplant) + other locally available vegetables, cabbage, coneflower, garlic, cucumber, turnip, reddish</i>
6	VITAMIN A RICH FRUITS	<i>ripe mango, cantaloupe, apricot (fresh or dried), ripe papaya, dried peach, and 100% fruit juice made from these + other locally available vitamin A rich fruits</i>
7	OTHER FRUITS	<i>other fruits, including wild fruits and 100% fruit juice</i>
8	ORGAN MEAT	<i>liver, kidney, heart or other organ meats or blood-based foods</i>
9	FLESH MEATS	<i>beef, pork, lamb, goat, rabbit, game, chicken, duck, birds, insects</i>
10	EGGS	<i>eggs from chicken, duck, guinea fowl or any other egg</i>
11	FISH AND SEAFOOD	<i>fresh or dried fish or shellfish</i>
12	LEGUMES, NUTS AND SEEDS	<i>dried beans, dried peas, lentils, nuts, seeds or foods made from these (eg. chick pea paste, peanut butter)</i>
13	MILK AND MILK PRODUCTS	<i>milk, cheese, yogurt or other milk products</i>
14	OILS AND FATS	<i>oil, fats or butter added to food or used for cooking</i>

5. Street food hygiene and safety conditions

A significant number of studies¹¹ show that the street food sector in Ghana has been characterized in the last fifteen years by food hygiene and safety (FHS) issues, and that these, despite visible improvements, still require a lot more work to be eliminated altogether.

5.1 Contamination levels

High levels of biological, chemical, and physical contamination¹² of food were

¹¹ Ababio et al., 2015; Atter et al., 2015; Danikuu et al., 2015; Luure et al., 2015; Apanga et al., 2014; Barker et al., 2014; Dwumfour and Agyapong, 2014; Monney et al., 2014; Pesewu et al., 2014; Tortoe et al., 2013; Ababio and Adi, 2012; Ameko et al., 2012; Feglo and Sakyi, 2012; Nicolo, 2012; Annan-Prah et al., 2011; Odonkor et al., 2011; Amponsah-Doku et al., 2010; Karg et al., 2010; Yeboah-Manu et al., 2010; Andoh et al., 2009; Ayeh-Kumi et al., 2009; Donkor et al., 2009; Rheinländer et al., 2008; Kwakye-Nuako et al., 2007; Boadi and Kuitunen, 2005; Feglo et al., 2004; Tomlins and Johnson, 2004; mensah et al., 2002; Arde-Acquah, 2000; King et al., 2000; Mihara, 2000; Ntiforo, 2000; Tomlins, 2000.

¹² Contaminants can be divided into three categories:

- **Biological:** Pathogenic bacteria (e.g. *Escherichia coli*, *Salmonella* spp., usually associated with faecal contamination from warm-blooded animals, or others, e.g. *Listeria monocytogenes*, commonly found in contaminated soil, water and ruminants); naturally occurring plant toxins (e.g. alkaloids, cyanogen glycosides); fungal (e.g. ergot, mycotoxins); parasites (e.g. *Cyclospora*, *Entamoeba*, *Giardia*, *Cryptosporidium*); Viruses (e.g. hepatitis A, Norwalk virus, Rotavirus).
- **Chemical:** Pesticide, insecticide and fungicide residues (international food law includes maximum residue levels for named compounds to be used on specific fruit and vegetables); heavy metals (e.g. zinc, lead,

found, representing a risk for the health of consumers in the short and long term.

As of biological contamination, one of the first and most cited studies on street food in Ghana (Mensah *et al.*, 2002) found that the microbial quality of most of the foods sold in the street of Accra was within the acceptable limits but samples of salads, Macaroni, Fufu, Omo Tuo and Red pepper had unacceptable levels of contamination. Mesophilic bacteria were detected in 69.7% of foods: 5.5% contained *Bacillus cereus*, 31.9% contained *Staphylococcus aureus* and 33.7% contained *Enterobacteriaceae*. *Shigella sonnei* and enteroaggregative *Escherichia coli* were isolated from Macaroni, rice, and Tomato stew, and *Salmonella arizonae* from Light soup. Ever since, all scientific studies on street food in Ghana have detected high levels of food contamination.

The most recent study by Atter *et al.* (2015) detected Coliform bacteria¹³, *Escherichia coli* and *Staphylococcus aureus*, as well as aerobic mesophiles, and yeast and moulds in Ice-Kenkey sold in Accra and Tema. In 2014, Barker *et al.* estimated a required log reductions¹⁴ of up to 5.3 (95th percentile) for rotavirus¹⁵

aluminium); mineral oils (e.g. diesel, grease, hydraulic oil).

- **Physical:** Glass, metal, stones, wood, twigs, pieces of bone and plastic.

¹³ "Coliform bacteria" are a commonly used bacterial indicator of sanitary quality of food and water.

¹⁴ "Log reduction" is a mathematical term (as is "log increase") used to show the relative number of live microbes eliminated from a surface by disinfecting or cleaning.

¹⁵ *Rotavirus* is the most common cause of severe vomiting and diarrhoea among infants and young children (Dennehy, 2000). The virus is transmitted by the faecal-oral route. It infects and damages the cells that line the small intestine and causes

for the salad sold in the street in Kumasi, demonstrating that significant interventions are required to protect the health and safety of street food consumers. In 2013, Pesewu *et al.* showed that all the raw-mixed vegetable salads sampled in Accra Metropolis had a high bacterial contamination. In particular, the authors isolated *Escherichia coli* (35%), *Staphylococcus aureus* (33%), *Klebsiella sp.* (17%), and *Bacillus sp.* (15%). In 2012, Feglo and Sakyi found that most ready-to-eat foods in Kumasi (e.g. Ice-Kenkey, Cocoa drink, Fufu, ready-to-eat Red pepper – normally eaten with Kenkey – salad, and Macaroni) were contaminated with enteric bacteria and other potential food poisoning organisms with bacterial counts higher than the acceptable levels. In 2011, Annan-Prah *et al.* analyzed samples of street foods sold in Cape Coast. The foods had the following bacterial contamination levels in colony forming units per gram (cfu/g): Meat pie (1.3×10^5), Khebab (5×10^4), Rice with Stew (4.1×10^5), Fried fish (8×10^4), Pepper sauce (1.4×10^5), Etsew or

gastroenteritis (which is often called "stomach flu" despite having no relation to influenza). Although rotavirus accounts for up to 50% of hospitalisations for severe diarrhoea in infants and children (Rheingans *et al.*, 2006) its importance has been underestimated within the public health community, particularly in developing countries (Simpson *et al.*, 2007).
References: Dennehy P.H. (2000). "Transmission of rotavirus and other enteric pathogens in the home". *Pediatr. Infect. Dis. J.* 19 (10 Suppl): 103–5. / Rheingans R.D., Heylen J., Giaquinto C. (2006). "Economics of rotavirus gastroenteritis and vaccination in Europe: what makes sense?". *Pediatr. Infect. Dis. J.* 25 (1 Suppl): 48–55. / Simpson E., Wittet S., Bonilla J., Gamazina K., Cooley L., Winkler J.L. (2007). "Use of formative research in developing a knowledge translation approach to rotavirus vaccine introduction in developing countries". *BMC Public Health* 7: 281.

Banku (3×10^5), Beans with Gari (2×10^4), Fufu (1.6×10^5), Wakye (6.6×10^5), and Dakua (2.3×10^5). Presence of *Escherichia coli* of faecal origin was detected in all investigated food samples. Khebab, Fried fish and Beans with Gari had acceptable bacterial contamination levels of $<5 \log_{10}$ cfu/g. The following major fungi were identified in the street foods: *Aspergillus flavus*, *Aspergillus niger*, *Aspergillus candidus*, *Cladosporium herbarum*, *Necrospora crassa*, *Penicillium citrinum*, *Fusarium*, *Mucor* and *Rhizopus* species. Yeasts were found in all investigated food items. All in all, the street foods were, therefore, found to have threatening unacceptable microbial contamination levels. In a 2010 study on street food samples in Accra, Yeboah-Manu *et al.* found that 52% of the foods sold had Aerobic Colony Count (ACC)¹⁶ values – presence of *Escherichia coli* and other Enterobacteriaceae, and the presence of *Salmonella sp.* and *Shigella sp.* were used – above acceptable limits and therefore, unsatisfactory for consumption; 40.7% had Enterobacteriaceae (EC) values above the limit. Nine different bacterial species were isolated from the foods sampled.

Contamination does not only affect artisanal foods, but also industrialized water sachets sold everywhere in Ghana (commonly called "pure water"). A study by Kwakye-Nuako *et al.* (2007) indicated the presence of contaminants of faecal

¹⁶ "Aerobic Colony Count (ACC)" is a count of viable bacteria based on counting of colonies grown in nutrient agar plate. This is commonly employed to indicate the sanitary quality of foods. (Codex Alimentarius Commission. FAO. WHO. 2003. *Working paper on elaboration of a regional Standard for Microbiological levels in foods* - Prepared by Egypt.: CX/NEA 03/16)

and zoonotic origin in some of the sachet water examined. Seventy-seven percent of the samples contained infective stages of pathogenic parasitic organisms: 29.6% of the samples contained at least one type of parasite, 14.8% contained at least 2 types of parasites, 25.9% contained at least three types of parasites, while 29.6% contained four types of parasites. Ninety-three percent contained unidentified impurities/artifacts.

As of chemical contamination, analysis of street food in Accra by Tomlins and Johnson (2004) and Tomlins (2000) found heavy metals (e.g. lead¹⁷) and mycotoxins¹⁸.

5.2 Contamination carriers and risk factors

Several factors along the whole production–supply–preparation–selling chain may be the cause of street food contamination. Pesewu *et al.* (2014) and Amponsah-Doku *et al.* (2011) agree on

¹⁷ Lead is a chemical that exists in the environment – in the air, water, plants, etc. If humans consume too much lead it is detrimental to their health. Infants and young children are particularly vulnerable to the toxic effects of lead. They can suffer profound and permanent adverse health effects, particularly affecting the development of the brain and nervous system, which can diminish their ability to learn. Infant formula contaminated with lead represents a particular risk because of the volume that infants consume. Levels of lead in infant formula can be controlled by sourcing raw materials from areas where lead is less present. The Codex Alimentarius Commission recommends that no more than 0.01 mg per kg should be permitted in infant formula as consumed. (<http://www.fao.org/news/story/it/item/238558/icod e/>)

¹⁸ See Zain, M. E. (2011). Impact of mycotoxins on humans and animals. *Journal of Saudi Chemical Society*, 15(2), 129-144.

the fact that the significant persistence and proliferation of bacteria from production to consumption is a reflection of poor hygienic and food handling practices and conditions at all stages of the chain.

As pointed out earlier by Mihara (2000) in his speech at the first Workshop for stakeholders, policy makers and regulators of street-food vending held in Accra in 2000, "the presence of *Escherichia coli* is an indication of the presence of faecal contamination, contaminated water, sewerage, food workers in contact with the food product, flies or other insect pests and certain strains of pathogens."

More systematically, we can distinguish two different categories of contamination factors: *endogenous* factors (implying the direct responsibility of vendors) and *exogenous* factors (outside the control of vendors). The former ones include poor hygienic practices (e.g. irregular hand washing), unsafe food handling (e.g. concurrent handling of money and food), poor compliance with use of protective clothing (e.g. apron, head covering, rubber gloves), poor cleanliness of kitchen utensils, use of informal manufactured pots, poor transportation and storage conditions, poor garbage disposal, exposure of food to flies and pests, feco-oral parasitic infections.

Exogenous factors include lack of public infrastructures enabling the vendors to comply with standard hygienic practices (e.g. clean water sources; public toilets), lack of public waste disposal service, poor hygienic conditions of vending sites (e.g. open-air sewages; traffic fumes; dust from dirt roads), contaminated inputs from farmers and

market sellers, poor storage conditions, unclean transportation conditions, consumers' poor food handling.

a. Contaminated inputs

Tomlins and Johnson (2004) stated that street food contamination can originate, at least partly, from raw materials from independent rural small holders. Ten years later, Pesewu *et al.* (2014) pointed the finger to the risks coming from the use of unsafe or contaminated water to irrigate the vegetables when growing on the farm or garden where vendors are directly or indirectly sourcing from. The authors pointed out that the use of unsafe or contaminated water to irrigate the vegetables when growing on the farm or garden could be a contributing factor of raw-mixed vegetable salads contamination. The same opinion is expressed by Amponsah-Doku *et al.* (2011), who pointed out that the use of wastewater in vegetable production guarantees a secure livelihood for urban and peri-urban farmers but without any wastewater treatment, it poses serious health risks to farmers, sellers and consumers.

Besides the wastewater used by farmers, also the refreshing water used at markets stalls for keeping lettuce fresh throughout the day could be a main contributor to inputs contamination. Amponsah-Doku *et al.* (2011) detected bacterial counts on farm lettuce, irrigation water, market lettuce, refreshing water, and street foods: they all exceeded the recommended WHO and International Commission on Microbiological Specifications for Foods (ICMSF) standards. In general, coliforms numbers

increased by 18% while *Enterococci*¹⁹ numbers reduced by 64% from the farms to the street. Two years earlier, Andoh *et al.* (2009) collected and analysed samples of lettuce, irrigation water and refreshing water in Kumasi looking for helminths eggs and *larvae*.²⁰ *Ascaris* and *Schistosoma* eggs were found in street food lettuce samples, ranging between 0 to 2 eggs 100-1 g wet weight, that is, less than the eggs found in refreshing water in the markets, ranging between 2 and 7 100-1 g wet.

As underlined by Soriyi *et al.* (2008), in poorly managed market environment in Ghana, unhygienic practice is the major cause for food contamination. Most fresh foods particularly that of animal origin like beef are highly susceptible to microbial invasion and food poisoning. The authors observed that majority of the butchers selling beef in the Ashaiman market in Accra did not practice safe hygiene standards as recommended by the Ghana Food and Drugs Board and the Ghana Standards Board. The beef samples were contaminated with Aerobic mesophiles, *Staphylococcus aureus*, *Bacillus cereus*, *Clostridium perfringens*, and *Escherichia coli*. The authors stated that there were chances that other meat sold by virtually the same group of persons could equally or even more be contaminated by food borne pathogens. Earlier studies by King *et al.* (2000) reported that 65.6% of the SFVs in Ga

¹⁹ Important clinical infections caused by *Enterococcus* include urinary tract infections, bacteremia, bacterial endocarditis, diverticulitis, and meningitis.

²⁰ Helminths, also commonly known as parasitic worms, are large multicellular organisms, which when mature can generally be seen with the naked eye. They are often referred to as intestinal worms.

District did not obtain their meat supply from an approved source. Factors influencing the purchase of meat from an approved source included the proximity to a slaughter facility, the conduct of meat inspection personnel and affordable user fees.

In addition to unsafe inputs, street food vendors themselves are often responsible for the contamination of the food they sell, as it is suggested by Atter *et al.* (2015) who recorded a tenfold increase in counts of aerobic mesophiles, and yeast and moulds during the production of *Ice-Kenkey* in Accra and Tema. Coliform bacteria, *Escherichia coli* and *Staphylococcus aureus* which were not detected in the starting materials were found partway through production or in the final product.

Contamination at this stage of the chain can be caused by unhygienic practices, unsafe storage, transportation, handling, and display of food, and use of inadequate cooking tools.

b. SFVs' hygiene and safety knowledge and definitions

Several studies provide statistics about participation of SFVs in training courses on food hygiene and safety. Rates range from 14% in Accra (Odonkor *et al.*, 2011) to 62.7% in Tamale (Danikuu *et al.*, 2015) to 90% in Kumasi (Ababio *et al.* 2011). A pattern is found in small and medium cities in the Center area (Bibiani, Dormaa Ahenkro, Konongo), where more than 60% on average attended trainings (Monney *et al.*, 2104, 2013).



Photo: Food stall in Accra, Ghana ©FAO/FAORAF

Most SFVs interviewed in several studies generally showed a high knowledge of food safety issues and proper food handling practices (Apanga *et al.* 2014; Ackah *et al.*, 2011), and expressed basic biomedical knowledge and awareness of disease and pathogenic transmission via food and water by especially describing the presence of visible elements that pose health risks (e.g. dirt at the vending site, flies, garbage, bodily liquids, gutter and fecal materials) (Karg *et al.* 2010; Donkor *et al.* 2009; Rheinländer *et al.* 2008), and by providing knowledge of severe food-borne diseases such as typhoid and cholera and their ways of transmission, as reported by Rheinländer *et al.* (2008), who also found that vendors' level of knowledge of food safety seemed to be positively correlated to their educational level, to some extent.

Nonetheless, the same authors, in their study on the perceptions of street food safety among vendors and consumers in urban Kumasi, showed that their notions of food safety were clearly diverted from microbiological notions of hygiene or health risks and biomedical notions of food safety; the definition of "safe food" was rather shaped by strong sensorial, social, and normative dimensions of food quality. Such definition put stress on cleanliness, proper manners, and aesthetic appearances (which they verbalized as "neatness") of vending site, stand, vendor, food. Most consumers also expressed that trust in the vendor was important when choosing a safe place to eat, and that this trust was built on previous positive experiences or

social/family relationships and not on food safety assessments. Interestingly, the authors noted that in the local language word for hygiene, "*ahote*", refers to cleanliness as well as morals and respect.

A few years later, another study on the perceptions among vendors, consumers and authorities on the safety of traditional street foods – namely, Hausa Koko, Waakye and Ga Kenkey – in Urban Ghana (Accra, Kumasi, Tamale) by Haleegoah *et al.* (2015) shows a shift towards a definition of food safety that is less based on aesthetical and social dimensions, and more on substantial aspects related to food preparation and consumption, a mix of the hygienic conditions of the environment and the point of sale, wholesomeness of ingredients used for preparation, cleanliness of vendors and their experience in preparation of food. Furthermore, if foods are served and eaten hot then they are considered to be safe. Moreover, if consumers had no immediate health problems or ailments after eating, then food was considered to be safe. Again, to some consumers, the use of indigenous ingredients made street foods safe for consumption. However, this time, consumers raised safety concerns in relation to the poor handling of foods, the source of water used to prepare foods and the presence of flies around the place where food was sold. One major concern was about the use of rusty milling machines for fresh vegetables for accompaniment. Other consumers perceived that after food regulators had certified vendors, their foods were supposed to be safe, since

consumers implicitly trusted that regulatory bodies made sure hygienic practices were enforced and environment was clean before certifying food vendors. Similar concerns about food hygiene and safety practices were expressed by consumers interviewed earlier by Mensah *et al.* (2013) in Tokaradi: one third of the sample would not buy if vendors operate in an unhealthy environment, one fourth if vendors are not neat, and one fourth believes street foods are carriers of health risks and diseases. Also pupils/students interviewed by Nicolo in Accra considered cleanliness of the vending space an important an important aspect when choosing where to eat.

c. SFVs' hygiene and food handling practices

As a consequence of defining "safety" on the basis of social, aesthetical and normative parameters rather than more "scientific" ones, the SFVs interviewed by Rheinländer *et al.* in 2008, even though proving to have good biomedical and food safety knowledge, showed overall insufficient hygiene and food handling practices.

The more recent shift towards a definition of "safety" that is based less on social-cultural norms and more on actual food safety knowledge among both vendors and customers seems to be reflected in a significant improvement of vendors' personal hygiene and food handling practices. Indeed, considering the statistics available for the years 2009-2015, the majority of SFVs show good levels of compliance to standard hygiene practices. Between 70% and 95% in large cities (Accra has the higher rate; Tamale the lowest) and between 50% and 65% in small and medium cities wear clean

protective clothing (e.g. at least one item between apron, hair cover, gloves) (Dwomfour-Asare and Agyapong, 2014; Dwomfour-Asare, 2015; Monney *et al.*, 2014, 2013; Nicolò, 2012; Ababio *et al.*, 2012); Addison (2015) found that gender, marital status and length of service were significantly associated with the use of protective clothing during work. Moreover, between 60% and 90% have clean and short nails and wear no jewels (Dwomfour-Asare and Agyapong, 2014; Monney *et al.*, 2014, 2013; Nicolò, 2012; Odonkor *et al.*, 2011), and only in Kumasi the rate is lower than 50% (Ababio *et al.*, 2012).

Even more important, between 70% and 95% of SFVs across the country wash their hands regularly while operating (Danikuu *et al.* 2015; Ababio *et al.*, 2012; Ackah 2011; Donkor *et al.*, 2009). The current fairly high tendency to wash hands among SFVs may depend, apart from a higher knowledge and awareness, on the fact that improved water sources²¹ are now available at

²¹ An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is likely to be protected from outside contamination, in particular from contamination with fecal matter. To allow for international comparability of estimates for monitoring the Millennium Development Goals (MDGs), the World Health Organization / UNICEF Joint Monitoring Program (JMP) for Water Supply and Sanitation defines "improved" drinking water sources as follows: Piped water into dwelling, Piped water, into yard/plot, Public tap / standpipes, Tubewell / boreholes, Protected dug wells, Protected springs (normally part of a spring supply), Rainwater collection, Bottled water (in this latter case, if the secondary source used by the household for cooking and personal hygiene is improved). Water sources that are not considered as "improved" are: Unprotected dug wells, Unprotected springs, Vendor provided water, Cart with small tank/drum, Bottled water (if the secondary source used by the household for

most vending points, both, in large cities (e.g. 85-100% in Accra and 50% in Tamale), and in small and medium cities (65-95%) (Apanga *et al.*, 2014; Dwomfour-Asare and Agyapong, 2014; Monney *et al.*, 2014; Nicolò, 2012, Ackah *et al.*, 2011; Odonkor *et al.*, 2011). One decade ago, Feglo *et al.* (2004) noted that, although the city had adequate water supply, many food handlers and consumers who used the public toilets in the course of the day were unlikely to wash their hands after using the toilet because of absence of water in them, and therefore constituted a significant risk in the spread of enteric fever. Fifteen years ago, according to a study by King *et al.* (2000), only 15% of the SFVs in Ga District (Greater Accra Region) had access to potable water while 85% purchased water from vendors and six used pond water (these two latter sources of water were of poor microbiological quality, as shown by faecal coliform).

Although the availability of clean water to street food vendors as well as hand washing have increased over the years, contamination is lurking where some vendors tend to misuse such crucial resource. Donkor *et al.* (2009) reported that 71.2% of the vendors in Accra discarded the water after washing their hand, while 18.2% used the same water for washing food equipment. Water storage containers were also found to be used for other activities more recently by Apanga *et al.* (2014). Addison (2015) found that three fourths of food vendors in the University of Ghana Campus washed their dishes in bowls of water

cooking and personal hygiene is unimproved), Tanker-truck, Surface water. (See www.wssinfo.org for more information)

while one fourth washed under running water; more than half of the latter ones, instead of emptying their bin whenever it was full, waited till the close of day before emptying them. There was a significant relationship between length of service and how often they changed the water.

The availability of water has not yet fully translated into its proper use by the vendors, and the time when Mensah *et al.* (2002) reported that 49% of SFVs in Accra had water with dirty appearance is not yet completely passed.

Risks of contamination linked to poor use of water and hand washing are higher when street food vendors are carriers of diseases. Stool samples were collected by Denikuu *et al.* (2015) from SFVs in Tamale and screened microscopically for gastro-intestinal parasites. 31.3% of food vendors were infected. Parasites identified and prevalence of infection were *Giardia lamblia* (16%), *Entamoeba histolytica* (9.3%), *Hymenolepis nana* (3.3%) and *Strongyloides stercoralis* (5.3%). The highest prevalence involved typical feco-oral parasites: *Entamoeba histolytica* and *Giardia lamblia*. A previous study by Ayeh-Kumi *et al.* (2009) indicated high levels of gastrointestinal parasitic infection among food vendors in Accra. The overall prevalence of parasitic infection was 21.6%, with helminthic (15.2%) predominating over protozoan (6.4%) infections. Eighty-three percent of vendors with no education, 45% of those with secondary education, and 28.5% of those with vocational education were found infected. The vendors who de-wormed more times had less chances to be found infected. In 2004, Feglo *et al.* isolated Typhoidal *Salmonellae* from 2.3% of the SFVs sampled in Kumasi.

Already in 2000, the representative of the Ghana Traditional Caterers Association (GTCA), the main association of street food vendors, pointed out that, out of 600 members of their association surveyed, about 35% were found to be suffering from typhoid, likely contracted from sewages next to the vending points (Apraku, 2000). As found by Denikuu *et al.* (2015), formal education, knowledge of food hygiene practices and medical screening reduced infections among street food vendors.

Another major contamination factor linked to food handling is the concurrent handling of money and food, which is a common practice among half of the SFVs in Tamale (Dwumfour-Asare and Agyapong, 2014) as, supposedly, in other Ghanaian cities. The high risks coming from money handling are proved by Luure *et al.* (2015) who isolated microbes from the cedi notes, namely *Escherichia coli* (19.1%), *Salmonella* species (3.8%), *Bacillus* species (0.4%), and total coliform (76.6%). The authors found that the five Ghana Cedi notes had the highest microbial load, followed by the two Ghana cedi notes, and one Ghana cedi notes recorded the least microbial load.

That been said, we must note that some street foods are intrinsically more likely to be contaminated than others, due to both the nature of the ingredients and the preparation methods. For instance, Tomlins and Johnson (2004) pointed out that microbiological studies indicated that *Fufu* was more at risk of contamination than other street foods. This was confirmed ten years later by a microbiological survey by Tortoe *et al.* (2013), that proved that *Kenkey* and *Waakye* are safe products while most *Fufu* are usually highly contaminated. Although some *Kenkey* vendors work in

unsanitary conditions and received the lowest total scores in a basic food safety survey, the product itself is safe with respect to microorganisms. *Waakye* vendors had higher total scores than *Kenkey* but lower than those vending *Fufu*. In the survey of food safety prerequisites the *Fufu* vendors received the highest score. Nonetheless, the *Fufu* samples analysed showed that the majority had detectable *Escherichia coli* suggesting that the continuous human handling during the moulding of the *Fufu* may have contributed to the high contamination. Already in 2000, excessive human handling during the preparation of street food was actually indicated by Ntiforo as a factor facilitating microbial contamination and proliferation.

Although hand washing and protective clothing may have improved (at least frequency wise, if not qualitatively), when we look at a wider range of food hygiene and safety practices indicators like those used by Dwumfour-Asare and Agyapong (2014) and Monney *et al.* (2014) (e.g. cleanness of vending point's premises, food storage, transportation and display conditions, cooking tools cleanliness, way of dishing out food), the picture still shows important gaps and issues.

d. Environment cleanness and food protection

The surroundings of vending points were found to be clean in 80% of cases in Accra (Odonkor *et al.*, 2011) and almost 90% in Tamale (Dwumfour-Asare and Agyapong, 2014), as well as 60% in small and medium towns in the Center (Dwumfour-Asare, 2015). In contrast, Ababio *et al.* (2012) found only 22% of clean sites in Kumasi.

In the Capital of Ghana, in ten years, the use of trash bins among SFVs seems to have increased from 12.3% (Mensah *et al.*, 2002) to 84% (Odonkor *et al.*, 2011). Nonetheless, despite the effort by the vendors to keep their surroundings clean, the disgraceful conditions of the roads make hygiene still precarious. Holes and missing asphalt in the road, and the typical uncovered sewages that line the edges of the streets of Accra create space for puddles of stale water, that were found in the proximity of almost half of the vending point in Accra (Nicolò, 2012) as well as in small and medium cities of the Center (Dwumfour-Asare, 2015).

In Accra, food pests and dust (either coming from dirt roads or the harmattan²²) expose to contamination the food sold, respectively, by 36.5% and 55.5% of SFVs. (Nicolò, 2012) The same author found stray animals roaming in the vicinity of only 5% of the vending points.

Food is adequately displayed at the vending point by using glass containers to protect them from environmental contaminants (flies, pests, dust, etc.) by 40-60% of SFVs in Accra (Ameko *et al.*, 2012; Nicolò, 2012). According to Ababio *et al.* (2012), only 10.5% of SFVs in Kumasi are as careful, while in small and medium cities located around the Ashanti capital, SFVs seem to be more aware of the importance of protecting food from contaminants: here, compliancy rates range from 20% to 55% (Dwumfour-Asare, 2015; Monney *et al.*, 2014, 2013).

²² Dry and dusty wind which blows from the Sahara Desert over the West African subcontinent into the Gulf of Guinea between the end of November and the middle of March (winter).

Physical contaminants could affect the food not only at the vending point, but also during their transportation from the market or from home to the vending site. The most common means to carry the food (either raw or cooked) are plastic bags or trays placed on the head, covered with a cloth or plastic (Nicolò, 2012). Ameko *et al.* (2012) recorded that a significant number of SFVs carry vegetables in open trays. Most of the vendors, who often live far away from their vending spot, use tro-tros to reach their place of vending, while very few use taxis (Nicolò, 2012; Annan-Prah *et al.*, 2011)

e. Food storage

When SFVs stay with leftover food at the end of the day, either they eat it with friends and family members, or they sell it the next day. The rate of SFVs that rely to this second option in Accra went from 82% (Donkor *et al.* 2009) down to 56% (Nicolò, 2012) in a few years. A lower percentage is found in Tamale, where about 40% of vendors sell leftovers according to Dwumfour-Asare and Agyapong (2014). Even lower rates are found in small and medium cities like Cape Coast (35%) (Annan-Prah *et al.* 2011) and Nadowli (25%) (Apang *et al.*, 2014).

To prevent leftovers decomposition overnight, they should properly refrigerate it. As noted by Nicolò (2012), though, the majority of vendors in Ghana lack storage facilities and cannot properly preserve leftovers. Donkor *et al.* (2009) found that more than half (56%) of SFVs in Accra stored the food in a fridge, while more recently Apanga found that in Nadowli (small city in the North), the fridge was used by less than half (47%). Many

vendors keep the food at room temperature. Adequate reheating of leftovers (if needed) at the moment of resale is not practiced on a regular basis (Annan-Prah et al, 2011; Amoah et al, 2006).

f. Cooking utensils

A further source of contamination is represented by utensils, pots and pans used for cooking. Although SFVs proved to wash their tools diligently, thus reducing the risk of biological contamination – as Nicolò (2012) found that in Accra, where almost all vendors used clean water to wash their utensils (98%) – hazards can come from chemical contamination through the use of non-approved utensils made of unsafe materials.

For example, although the concentrations of the heavy metal lead

found in street food by Tomlins and Johnson (2004) were generally low, cooking pots produced by informal manufactured cooking pots contained high concentrations of lead (419 mg/kg) that could leach into foods at levels slightly above the maximum permitted level recommended by WHO and FAO. Formal manufactured cooking pots showed levels below the maximum permitted level of WHO and FAO, but further research revealed that the concentration of lead in foods cooked in brand new pots was highest at between 0.619 and 0.757 mg/kg and this declined to between 0.203 and 0.225 mg/kg after the cooking pots had been aged by using at least three times (Tortoe *et al.*, 2008; Tomlins and Johnson, 2004). Although lead risk to consumer health is probably small, any amount of lead in food is a food safety risk since it can accumulate in the body over time, affecting the development of the brain and nervous system.



Photo: Food stall in Accra, Ghana ©FAO/FAORAF

5.3 From risks to disease

Despite knowledge of the risks carried by street foods, actual harms to consumers' health are yet to be fully proven and understood. Due to difficulties in tracking vendors as well as consumers, and the lack of a food-borne disease reporting system, follow-up studies proving actual connections between street food consumption and food-borne diseases are still very few.

Moreover, little attention has been devoted to consumers and their eating habits, behaviours and awareness. The fact that social and geographical origins largely determine consumers' physiological adaptation and reaction to foods – whether contaminated or not – is neglected in literature (Marras, 2014).

AMA has established a sanitation court which exclusively deals with offences to food safety laws and regulations and tries to overcome the problem of long waiting lists. However, to date, figures on the number and type of offences filed to the court are still not available (Nicolò, 2012).

We were able to find just a few studies that attempted to link the widely demonstrated risks coming from street food consumption in Ghana, on one hand, and the actual spread of food borne diseases, on the other hand. The first study was published by IFRPI in 2003 (*cit.* Boadi and Kuitunen, 2005) showing that there was a significant association between diarrhoea morbidity and regular consumption of street food, and that such association is particularly strong in the case of children. The study stated that “there is previous evidence that children in Accra who ate less street foods grew better than those whose diet included a greater percentage of street foods.”

Besides the fact that it is not clear what the authors meant by stating that children who do not eat street food “grow better”, such a finding does not prove a direct connection between the consumption of street food and the occurrence of food-borne diseases; indeed, as street food consumption rates are higher among children living in poor households, any disease they may develop could be rather be generated by poor sanitary conditions and poor nutrition at the household level, not to the consumption of street food itself. Ten years later, a pretty significant percentage (27%) of the pupils/students interviewed by Nicolo (2012) reported they had been sick during the last six months, and more than 44% of these declared that their illness was associated with food poisoning or it was somehow related to the ingestion of unhealthy food, although, also in this case, it was not specified whether the food responsible for the poisoning was bought in the street or it was consumed at home or in other places.

More recently, Haleegoah *et al.* (2015) found that the majority of consumers interviewed in Ghana's major urban areas had not experienced diarrhoea or any other health problems and did not know of anyone who had experienced diarrhoea or any other health problems from consuming Koko, Waakye or Kenkey. However, the few that experienced any health problems and knew others that had experienced ill effects from consuming these foods should raise safety concerns.

6. Public policies

In Ghana, either at the national or at local level, there is no framework policy or law specifically regulating street food vending. The sector is instead regulated on the basis of a set of scattered rules drawn from several by-laws, each one addressing different aspects (e.g. urban planning, labor, taxation, food control systems). A summary and analysis of the main by-laws directly affecting the sector are reported in this paragraph, widely drawing from the works of Nicolò (2012) and Osei-Boateng (2012).

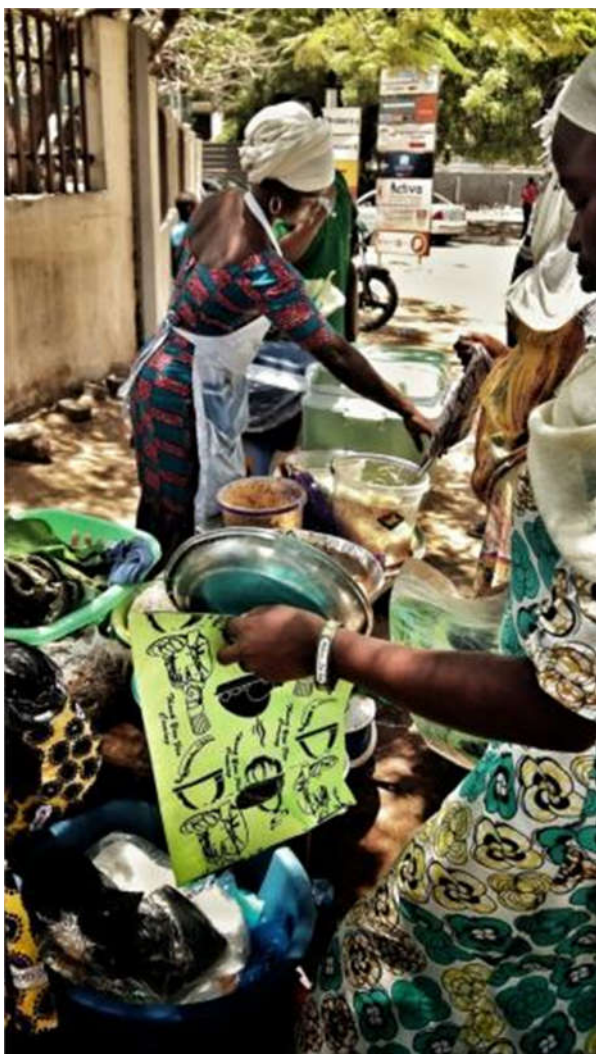


Photo: Ladies selling food at a stall in Accra, Ghana ©FAO/FAORAF

6.1 Urban planning and street vending regulations

The 1993 Local Government Act 462 permits local assemblies to enact by-laws permitting or prohibiting certain activities within their jurisdiction. In 1998, the AMA designated some streets and areas in the city, even within the Accra central, for vending activities. Also outside these areas, for many years, vendors have comfortably pursued their activities. Later on, the worsening of traffic congestion and poor sanitation of public spaces prompted urban regeneration plans including stricter by-laws on street vending. Somehow, in public discourses and narratives, street trade seems to become the cause of traffic congestion, while it is this latter one that rather draws street vendors. As Barimah Owusu *et al.* (2013) put it: traffic congestion is a friend of street hawking, and an enemy of city managers. In September 2010, the AMA enacted a list of activities prohibited on streets and pavements in Accra, including:

- sale, offer of sale or purchase of merchandise to vehicle drivers or passengers;
- trading on the street (except for street markets).

In accordance with the new by-laws (enforced from 1st April 2011), the AMA published a list of streets (mainly highways), along which vending was prohibited. The law emphasized that unless a street is designated as a street market, traders are prohibited from trading on the street. City guards were deployed along the prohibited areas and a special court was created to trial offenders. Offenders were convicted to fines or even to a term of imprisonment or communal labor. Such Law applies to all

street vendors, either selling food or other goods.

6.2 Licensing procedures

The information about the licensing process for street food vendors in the metropolitan area of Accra are very hard to find. As far as Nicolò (2012) was able to ascertain, most information was available through the web site of the AMA, although no comprehensive and detailed guidance of what is required in order to start a street food vending activity was given. As many vendors are illiterate or have limited computer skills or access to computer facilities, to obtain this information represents a challenge for them.

In the attempt of correctly informing street food vendors on the licensing process for their activity, guidelines have been prepared by the Food and Drugs Authority (FDA) to provide them with proper guidance on the different steps to follow. These guidelines foresee a strengthened collaboration between the FDA and the officials of the respective Metropolitan, Municipality and District assemblies.

The different steps to obtain the vending authorization, according to Nicolò's understanding of the information reported on the AMA web page, are summarized as follows:

- i. The process of being compliant with the law starts with obtaining a "Development and Building Permit" (DBP) from AMA, required to all persons who intend to set up any vending site within the Metropolitan jurisdiction. This is to ensure that the proposed project conforms to the building regulations and

development control guidelines of the city of Accra. The requirements to obtain this permission are quite stringent.

- ii. The second step for anyone who processes, sells, exposes food, is to obtain a "Business Operating Permit" (BOP).²³ No person shall carry on any business, in or upon any premises within Accra without a Business Permit duly granted by the AMA. A Business Permit granted shall expire on the 31st day of December of each year, and thus renewed at the beginning of each year. A Business permit is not transferable. A fee is charged in line with nature of business for every Business Permit granted in accordance with the Assembly's fee fixing resolution. The AMA may close down any business or suspend its activities until the permit fee is paid for the operation of the business.

In the case of street food vendors, the BOP is issued by the health inspectors from the Environmental Health Department following an inspection of the hygiene of the place of vending.

The BOP states the number, the person to whom is issued, the premises or location, the duration and the date of issuance and has to be visibly exposed at the vending site.

- iii. Aside from the DBP and the BOP issued by the AMA, food and beverages handlers must have a valid personal Health Certificate issued by a recognized health

²³ The Business Operating Permit is established by the Accra Metropolitan Assembly's Business Operating Permit bye-law of 1995.

institution. At the moment of the drafting of Nicolò's study, there were few private laboratories which had a valid authorization for issuing these certificates and their cost was approximately GHS 30. Additionally and in many cases, when the licensed person is not the only person in charge of preparing the food, health certificates should be made compulsory also for his/her own *staff*.

We must underline that in order to obtain a license to handle and sell food in Ghana, there is no need to attend a HACCP²⁴ training course, which is mandatory in other countries.

6.3 Employment laws

The 2003 Labour Act 651 makes provision for the protection of employment, conditions of employment, protection of remuneration and provision of social security as well as the rights and duties of employers and workers among others. The act, though, applies only to persons employed under contract of employment whether on a continuous, part-time, temporary or casual basis, thus excluding self-employed persons. For the majority of street vendors, who are self-employed without employees, only the National Pensions Act (Act 766, 2008) makes provisions for them. The National Pensions Act provides for voluntary membership for them, and the 3rd Tier of the scheme specifically targets informal

²⁴ Hazard analysis and critical control points or HACCP is a systematic preventive approach to food safety from biological, chemical, and physical hazards in production processes that can cause the finished product to be unsafe, and designs measurements to reduce these risks to a safe level.

sector workers. As of vendors with employees, the National Pensions Act, together with the Workmen Compensation Act (1984) set out their responsibilities to provide social security benefits (namely pension, invalidity, survivors benefits and work injury benefits) to them. (Osei-Boateng, 2012).

6.4 Income tax laws

Individuals, groups or companies in Ghana unless otherwise exempted by the law are required to pay taxes on income earned from employment, businesses and investments to the government. The Local Government Act 462 empowers local assemblies to raise internal revenues. Osei-Boateng (2012) notes that, over the years, taxing informal sector businesses has become a major challenge to the Revenue Agencies in Ghana. A large number of informal sector businesses are outside the tax net. This is partly due to the invisible nature of some informal businesses and poor book keeping that makes it difficult to determine the taxable income. The Ghana Revenue Authority and local assemblies have nevertheless employed various means of collecting taxes from operators in the informal sector. For instance, registered medium to small scale businesses pay monthly income/sales tax (based on declared sales/profit) whereas petty traders are levied daily fixed rate tax (notably referred to as "ticket"). The tax rate is fixed by the Assembly and adjusted periodically. In 2011, according to the author, the "ticket" in Accra was at a very low rate of GH¢ 0.20 per day. In the same period, Otoo *et al.* (2011) recorded the same information in Kumasi, where SFVs paid GH¢ 0.20 (USD 0.13), plus a

monthly fee of GH¢ 3.25 (USD 2.10²⁵). Considering an average 6-day working week, monthly fees amounted to GH¢ 8 (USD 5.22). Otoo *et al.*, though, do not specify what this fee is paid for, and to who.

In 2000, Obeng-Asiedu found that more than half (54.5%) of the SFVs in Accra paid income tax. Fifteen years later, Antwi *et al.* (2015) showed a similar result referring to chop bar and fast-food²⁶ operators or businesses in Tamale, finding that 50.0% of them paid or has been paying their income tax.

In a focus group discussion held by Osei-Boateng (2012) with street vendors in Accra, they bemoaned the tax regime. They argued that the daily tax collection was not fair as it does not make exemption for lean sales. Participants also believed that the local assemblies' stance that street vending is illegal is contradictory with its tax collection policies. Official from the AMA however replied that taxes are levied on all businesses operating within its jurisdiction, regardless of their formal/informal status. The study noted that the Revenue Collection Unit of the AMA operates independently from the health inspectors of the Environmental Health Department that are in charge of inspecting vendors' compliance with BOP rules (Osei-Boateng, 2012).

In many cases, SFVs also pay a variety of levies to private actors such as

²⁵ Otoo *et al.* provided the information in USD. We then calculated the amount in GHC at the 2011 average exchange rate (about 1.5).

²⁶ The term "Fast Food" in Ghana mainly refers to small kiosks (usually built in metal) selling food and beverages along the streets. Therefore, what we call Fast Food in Ghana falls within the larger framework of street food.

vendors' associations/unions and private owners of the land on which vendors operate (Anyidoho, 2013).

As a consequence of the high rate of income tax evasion, there is a lack of on-going public financial resources made available to national and local authorities to support the development of the sector. This creates a vicious circle discouraging vendors to regularly pay fees and income tax, since they would hardly benefit in terms of better working conditions, welfare and social security, and economic return.

6.5 Food control system

In Paper 76 "Assuring Food Safety and Quality: Guidelines for Strengthening National Food Control Systems" (2003), FAO outlines the main building blocks of standard national food control systems:

- i. Food Law and Regulations
- ii. Food Control Management
- iii. Inspection Services
- iv. Laboratory Services: Food Monitoring, Epidemiological Data
- v. Information, Education, Communication and Training

a. Food law and regulations

Several authors underlined that current food legislation in Ghana is outdated and inconsistent at national, regional, district, metropolitan, municipal level (Ababio and Lovatt, 2015; Monney *et al.*, 2014; Abrokwah, 2013; Nicolò, 2012; Sefa-Dedeh, 2009).

BOX 1. Currently in Ghana there is a set of by-laws aiming to ensure the innocuousness of the foods available on the domestic market. Here is a list of the main ones:

- Food and Drugs Law (P.N.D.C.L. 305B, 1992) and Food and Drugs act (amendment) (1996) (implemented and monitored by Food and Drugs Board)
- Public Health Act 851, Part Seven, (2012) (implemented and monitored by Food and Drugs Board)
- Standards Decree (N.R.C.D. 173, 1973) and Standards Decree (amendment) (1979) (implemented and monitored by Ghana Standards Board)
- General Labelling Rules, 1992 (L.I. No. 1541, 1992) (implemented and monitored by Food and Drugs Board)
- Ghana Standards Board Certification Mark Rule, LI 662,1970 (implemented and monitored by Ghana Standards Board)
- Pest and Plant Disease Act 307, 1965 (L.I. No. 1541, 1992) (implemented and monitored by Plant Protection and Regulatory Services)
- Pesticides Act 528, 1997 (implemented and monitored by Ministries of Health, Food & Agriculture & Trade)

Source: Nicolò, 2012

BOX 2. Some of the key by-laws relating to the enforcement of food safety at municipal level in Accra are listed here:

- Local Government (Accra Metropolitan Assembly Establishment) Instrument, 1995-LI 1615
- The Accra Tema City Council Bye-Laws, 1972 (control of prepared food stuffs)
- Accra-Tema City Council (Control of bakeries and sale of bread)
- Accra-Tema City Council (Control of Hotels, Restaurants and Eating-houses) Bye-Laws 1974
- The Accra District Council (Sale of Meat and Fish) Bye-laws, 1975
- The Accra District Council (Control of Treatment and Sale of Milk) Bye-Law, 1976
- The Accra District Council (Control of Dried Food-stuffs) Bye-laws 1976
- The Accra City Council (Sale of Iced water and aerated water) Bye-laws, 1976
- The Accra City Council (Control of Food Wrappers) Byel-Laws 1976

- The AMA (Hawker's Permit) Bye-Laws, 1995
- The AMA (Public Markets) Bye-Laws, 1995
- The AMA (Control of Mills) Bye-Laws, 1995
- The AMA (Sale of Palm Wine and Can or Beer and Akpeteshie) Bye-Laws, 1995
- The AMA (Growing and Sale of Crops) Bye-Laws, 1995

Source: Nicolò, 2012

b. Food control management

Until a few years ago (2007, according to Charles; 2012, according to Nicolò) there were overlaps in regulating the food-processing sector, especially in relation to inspections and market surveillance. Such overlapping in roles and responsibilities within the different governmental actors – e.g. Ghana Standards Board (GSA), Food and Drugs Authority (FDA), local government authorities (LGAs), Ghana Tourism Authority (GTA)²⁷ – was the cause of inefficiency in the use of governmental resources and created room for increased informality in the system. Pending legal measures (such as the

²⁷ As an example, the Ghana Tourism Authority (GTA), with a clear overlapping responsibility with the AMA, is also involved in inspecting and licensing street food vendors as they are considered *informal caterer establishments* providing and advertising traditional Ghanaian food and therefore representing a tourist attraction falling under GTA responsibility. These inspections usually take place once a year during the month of May. The GTA also provides training on specific hygienic and food safety related issues (e.g. food handling, preparation and presentation). According to Nicolò, however, there was scarce communication between the GTA and the AMA (e.g. for the drafting of a common inspection questionnaires to collect information covering mutual areas of interest with sensible cost reduction) that remains the only administrative body with the authority to sanction and prosecute offenders who contravene the law. (Nicolò, 2012)

Nowadays, according to a recent study by Charles (2014), the duplication of regulations in the Ghanaian food-processing sector is minimal. The processor is certified by GSB and the FDA. The author noted that the GSB and FDA collaborate in some of their activities, including inspections and the sharing of reports and laboratory facilities. The director-general of GSB interviewed by the author stated that "although there are a lot of regulators in Ghana, we have agreed that the FDB should take the lead in enforcing regulations." Under the current structure, the Food and Drugs Board (FDB) is the central food safety agency for Ghana, in charge of coordinating all activities relating to food safety. In this capacity, the FDB implements the policy decisions of the ministries concerned (MOFA, Ministry of Health, and Ministry of Local Government and Rural Development), and enforces the standards set by the Ghana Standard Board (GSB) through inspections and conformity assessment, either directly or through relevant agencies as the districts and municipalities. The local government authorities (LGAs), says the director-general of GSA, "basically deal with the informal sector, especially the street food sellers and they offer health certificates to personnel."

Despite the agreements reached between agencies, new formal by-laws still need to be finally established in order to harmonize roles and responsibilities of the different institutions.

BOX 3. Below, some of the main institutions involved in the food management system in Ghana, and their current roles and responsibilities:

- **Food and Drugs Authority (FDA)** which is the National Regulatory Body under the Ministry of Health, with the responsibility of implementing the Food and Drugs Law of 1992 to ensure the safety and wholesomeness of the food eaten in Ghana. In particular, it is responsible for: food labeling, safety of all food products (including food products of animal origin and bottled and *sachet* drinking water) and regulation of meat markets and shops;
- **Ghana Standards Authority (GSA)** which was established by the Standards Decree, 1967 (NLCD 199) which has been superseded by the Standards Decree, 1973 (NRCD 173) is in charge of national standards development and dissemination as well as conformity and inspection activities and products certification scheme;
- **Food Research Institute (FRI)** as part of the CSIR (Council for Scientific and Industrial Research) has the mandate to pursue the implementation of Government policies on scientific research, specifically related to food, and to advise the government on scientific and technological advances likely to be of importance to the national development;
- **Metropolitan and districts Assemblies** with the generic function to promote and safeguard public health through the enforcement of the existing laws and regulations. They rely on officers out-posted from the Ministry of Health to perform their inspection duties;
- **Plant Protection and Regulatory Services Directorate (PPRSD)**;
- **Quality Control Division (QCD)** of the COCOBOD, the Directorate of Veterinary Services (DVS);
- **Animal Production Directorate (APD)**, the Ministry of Fisheries, the Chemical Control and Management Division of the Environmental Protection Agency (EPA) and Women in Agricultural Development (WIAD).

Source: Nicolò, 2012

c. Inspection service

Overlaps, duplications and ambiguities in institutional responsibilities when it comes to food safety inspections are the cause of inefficiencies in the use of governmental resources, especially when it comes to plan and manage inspections.

The enhancement of a coordinated inspection system is key in the building of an efficient and effective food control management system. Indeed, the administration and implementation of food laws require a qualified, trained, efficient and honest food inspection service. The food inspector is the key functionary who has day-to-day contact with the food industry, trade and often the public. The reputation and integrity of the food control system depends, to a very large extent, on their integrity and skill.

As human resources in some food control agencies in developing countries may be limited, environmental health inspectors are often also asked to work as food inspectors. This is not the ideal situation as they may lack the skills and knowledge to effectively evaluate and inspect food operations. If environmental health inspectors must be used, then they should be carefully supervised and provided with on-the-job training. (FAO, 2003)

AMA's Business Operating Permit bye-law of 1995 reads that any officer or a person duly authorized by the AMA may, during business hours enter into or upon any building, premises or land within the area of authority of the AMA for the purpose of carrying out any inspection enquiry or any other duties authorized by the AMA. No person shall obstruct or interfere with any officer or person authorized by the AMA in the

performance of any duties assigned to him under the bye-law.

The inspectors may withdraw or revoke any Business permit granted if any condition for granting of the BOP is breached. A person who contravenes any provision of the BOP bye-laws commits an offence and shall be liable on summary conviction to a fine or in default to a term of imprisonment or both.

Key informants polled by Dwumfour-Asare in 2015 in Mankraso and Ejura, in Kumasi area, were confident that the existing inspection processes and mechanisms could ensure compliance with food vending regulations and standards among street food vendors. Nonetheless, street food vendors' perception about officials' visits do not necessarily influence hygiene practices since enforcement during visits could be weak or not fully embedded. Dwumfour-Asare show that inspections are conducted unevenly in different locations. Most vendors from Mankranso (78%) reported that officials' field visits were frequent unlike few vendors from Ejura (17%). Despite inspections were more rare in the second city, significant association and correlation was established between personal hygiene practice and reported field visits there, but not in the first city. Almost all vendors (94%) claimed they knew their trade is regulated by law. However, a good number of vendors could not list two or more regulatory requirements and the overall regulatory consciousness levels were way below average.

Nicolò (2012) recorded that half of the SFVs in Accra undergo visits on an annual basis, and that they feel little urgency to formalize their legal status and to comply with the safety rules and

standards as local authorities do not perform routinely controls.

The discontinuity with which inspections are conducted is mainly due to authorities' logistical constraints limiting the enforcement of by-laws, as found in several studies. Regulating authorities are under-resourced, have limited personnel with specific competence to perform the controls, and have inadequate equipment and logistic support. This translates into lack of thorough data and might facilitate corruption. Inspection constraints do not seem to have improved since 2000, when Fenteng denounced that lack of personnel and unavailability of utilities were the main constraints that AMA faced in enforcing by laws.

When inspections take place, the way they are carried out is often perceived by SFVs as "harassing". Forced evictions and equipment seizure by local authorities are by far the most serious problem facing street food vendors (Bobodu, 2010; Asiedu and Agyei-Mensah, 2008). In this sense, things have not changed significantly since 2000, when vendors were unhappy about what they described as "harassment" by officers of food control agencies, claiming that officers concentrated more on policing them and enforcing the outdated laws than creating the right conditions to enable the vendors do the right things (Ntiforo, 2000; Obeng-Asiedu, 2000). At that time, Laryea contested such charge, complaining instead about uncooperative attitude of vendors, who misjudged the simple monitoring by AMA of their activity as harassment. The same opinion may likely be expressed by AMA's inspectors nowadays.

In 2012, one fifth of the SFVs in Accra declared they had experienced forced eviction at least once, and had to move from their vending site, mainly because they didn't have any vending authorisation or they were not respecting hygienic regulations (Nicolò, 2012).

Already in 2000, Ghana authorities admitted that fines and penalties did not serve as deterrent against widespread informality and unsafe practices. Fifteen years later, systematic evictions against unlicensed vendors have proven unsustainable (Steel *et al.*, 2014; Solomon-Ayeh *et al.*, 2011): ineffective – as long as abiding, broader socio-economic issues fuelling the sector (e.g. unemployment, fast urbanization) remain unsettled, evicted vendors will not disappear but simply move – and counterproductive – since forced evictions and equipment seizure generate reluctance among vendors to engage in the upgrade of their vending apparatus, at the expense of food safety.

d. Laboratory services

In 2015, Ababio and Lovatt noted that currently the media, instead of institutional agencies, serve as the main source for reporting of food borne diseases in Ghana.

Adding to the difficulty for public health officials is the fact that many infections are not reported (Rheinländer *et al.*, 2008, cit. Hiamey *et al.*, 2015).

e. Information, education, communication and training

In the last fifteen years, national and municipal authorities in Ghana have been more and more mindful of the importance of street food in the daily life of urban

population, and have thus implemented soft policies and interventions aimed at developing vending conditions. In 2000, AMA declared that, in enforcing the laws, the authorities were "mindful of the importance of street food in the daily life of urban population. AMA has [thus] tried not to over-regulate vendors so as not to eliminate this vital sector. This is not to say that the health of the public must be sacrificed on the altar of convenience. So, apart from prosecuting offenders who contravene the laws, AMA aim to educate them [either licensed or not] on the requirement, also through their associations; health inspectors are carrying out on the spot training" (Fenteng, 2000).

National and local authorities have mainly been focused on the eradication of endogenous risk factors (those implying the direct responsibility of vendors) by training vendors on food safety and hygienic standards, often in partnership with FAO and other national and international organizations. Appreciable results are currently being achieved from face-to-face on the spot training sessions organized by the Accra Metropolitan Assembly (AMA) in collaboration with the Ghana Food and Drugs Authority (FDA) during their by-weekly food safety itinerant campaigns, in the areas of major concentration of the street food vendors and hawkers, such as lorry stations and markets (Nicolò, 2012).

On the contrary, a recent review by Ababio and Lovatt (2015) on food safety and food hygiene studies in Ghana, found that Ghanaian Government's support for small and medium enterprises (SMEs) and food handler's health screening had a limited impact on the actual use of prerequisites measures and food safety management systems by SFVs.

Rheinländer *et al.* (2008) found that knowledge was not turned into safe practices, not even by those vendors who had obtained formal training in cooking.

As Karg *et al.* (2010) pointed out, the reasons for a vendor not to change his/her practice can be numerous and of different weight, linked to tradition, family pressure, community norms, time pressure, inconvenience and so on: the reason is not always necessarily a lack of awareness of the social or health benefits of adopting the practice promoted. For instance, promotional materials and campaigns as used in other cultures do not appeal necessarily and might even be misleading if unknown symbols or vocabulary are used. Secondly, recommended practices for increased food safety do not in most cases provide direct profit or reduce production costs (they may even be more expensive). Finally, safety regulations are often too theoretical and do not fit local capacities or context.

Moreover, the emphasis on food safety seem not to effectively stimulate SFVs to enhance their practices. Those interviewed by Bobodu in 2010 were interested in seminars on entrepreneurship, management, and book keeping. They reported that this kind of training programs will develop and shape their level of thinking which will subsequently aid in growth and expansion of their businesses. In this perspective, the growing involvement of the private sector (e.g. multinational corporations of the food and beverage industry) is lending a hand in the improvement of street food sector (both in terms of safety and economic growth) in the form of sponsorship, materials for training and actual training of vendors

who are employed to sell industrial foods and beverages (e.g. Fan Milk, Nescafe).

On the side of consumer education, in 2000 Laryea lamented an uncooperative attitude of consumers, saying that the education of consumers aimed at organized groups as a tool to enhance improvement of street food was an ongoing activity by the Metropolitan food Inspectors, but that the formation of a consumers association had been so far an up-hill task.

6.6 National food policy plan

Following FAO guidelines for Food Control Systems, after almost two decades during which Ghana food policies had remained almost unchanged, in 2016 the Government of Ghana adopted a new “National Food Safety Policy”, supported by WHO and FAO, aiming to achieve the following objectives²⁸:

- i. Review or amend when necessary existing legislation and regulations on food safety to promote harmonization and synergy of legislation. Enact new laws deemed necessary to promote food safety.
- ii. Establish a mechanism for coordinating food safety related activities in Ghana by ensuring harmonization and institutional cooperation among relevant stakeholders.
- iv. Coordinate and strengthen existing laboratories to ensure food safety. Strengthen the food borne diseases surveillance system including early warning and crises management

²⁸ <http://www.afro.who.int/en/ghana/press-materials/item/7642-ghana-adopts-food-safety-policy.html>

mechanisms. Laboratories are an essential component of a food control system. The establishment of laboratories requires considerable capital investment and they are expensive to maintain and operate. Therefore careful planning is necessary to achieve optimum results. The number and location of the laboratories should be determined in relation to the objectives of the system and the volume of work.

- v. Strengthen the mechanism for the provision of food safety information, education and communication. Develop human capacity along the food value chain. Encourage the use of Food Safety Management systems (e.g. HACCP).
- vi. Ensure the provision of appropriate infrastructure for effective food safety management.

6.7 Infrastructural interventions

The latter objective included in new the National Food Policy is a crucial one. Indeed, besides the commitments in educating vendors, little has been done so far to enhance exogenous conditions (e.g. through infrastructural interventions), which limits the ability of vendors to put the knowledge acquired into practice. The lack of adequate infrastructures denounced by Ntiforo in 2000 (e.g. supply of potable water was inadequate; insufficient and unreliable waste disposal system; inconvenient and unhygienic eating places) has not been overcome yet, despite the fact that the vendors themselves stated, back then, that they were prepared to pay for infrastructural services.

Apraku, a representative of the Ghana Traditional Caterers Association (GTCA), in occasion of the workshop on street food organized in Accra in 2000, criticized the emphasis put by the authorities on "safety" gaps in the street food sector, stating that "most of the SFVs are equally hygienic as other food handlers in chop bars and restaurants. He rather underlines the need of infrastructures and structures such as kiosks to operate more safely. Twelve years later, Babadou (2012) still noted that many of the respondents wanted government to build structures to prevent them from facing harsh attitudes from government officials.

Alternative attempts to relocate vendors within market areas designated by the authorities have failed so far, as they often are not strategically located in terms of both customers and nearby affordable living space (Steel *et al.*, 2014; Solomon-Ayeh *et al.*, 2011).

All in all, public interventions and positive outputs remain scattered and have not become systematic actions (Nicolò, 2012) mainly due to institutional (lack of harmonization among public agencies and legislations) and financial (lack of public funds) gaps.



*Photo: Lady selling food at a stall in Accra, Ghana
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B. RECOMMENDATIONS FROM LITERATURE

Recommendations were made by the authors of the selected studies, addressing key stakeholders (mainly national and local public authorities, but also vendors, associations and consumers) to improve street food safety and nutrition quality, as well as vendors' livelihoods. The following are the main recommendations from thirty-five studies published between 2004 and 2015, divided into categories based on to the problems and gaps they address and wish to solve. No study assessing the actual implementation of such recommendations was found.

7. Laws and regulations development and enforcement

- According to several authors, updated by-laws regulating all dimensions of street food vending should be enacted and enforced to meet its current characteristics and conditions (Annan-Prah *et al.*, 2011).
- Policy formulation needs participatory dialogue involving all the stakeholders (Karg *et al.*, 2010).
- Regulation of street food vending activities is needed, but over-regulation should be avoided. Indeed, the compliance to rules often rises the costs of business management, which could result in a rise in prices of food and thus in a reduced accessibility by consumers, at the expense of their food security. (Nicolò, 2012)

7.1 Licensing regulations

- No person shall operate as a food vendor unless he/she obtains a license from the relevant authorities. A license issued shall expire on the 31st December of the year in which it is issued. (Tomlins and Johnson, 2004)
- More clarity on the functioning of the licensing process should be a priority action. The process of licensing for street food vendors must be made shorter and easier, and the information about it must be easily available. An itinerant licensing campaign reaching the vendors on their place of vending would be a viable method to inform and prompt regularization of the sector. (Nicolò, 2012)

7.2 Food hygiene and safety regulations

- The regulatory authorities should enact new laws on food hygiene and safety practices to eradicate food contamination and infection. (Danikuu *et al.*, 2015; Apanga *et al.*, 2014)
- Regulations are required to institutionalize new food-safety recommendations, addressing bad practices and institutionalizing good ones. (Karg *et al.*, 2010)
- The required standards for food hygiene among street food vendors need to be clearly defined on a national scale through the collaborative efforts of all stakeholders to serve as a point of departure for local bye-laws on food safety. (Monney *et al.*, 2014)
- Every vendor, helper or food handler shall be required to undergo basic training in food hygiene, personal hygiene, food handling and storage and food laws prior to licensing. Training is to be conducted by the

relevant authority or other institutions recognised or approved by the relevant authorities. (Tomlins and Johnson, 2004)

- Good hygiene practices, which are mostly called Prerequisite Measures, should be enforced as the basic requirement for food vendors. The HACCP control points should be applied and made a legal requirement. This will help to raise the standard of operations and practices of the food industry in Ghana to an international level. (Ababio and Lovatt, 2015; Karg *et al.*, 2010)
- Verifiable microbiological standards should be set. (Annan-Prah *et al.*, 2011)
- Any vendor, helper or food handler shall be required to undergo medical examination or the requisite medical investigation by the relevant authority. (Tomlins and Johnson, 2004) It is suggested the inclusion of screening for *Salmonellae* in the regular obligatory six-monthly examination required of food handlers and to monitor those found to be infected. (Feglo *et al.*, 2004) Any vendor, helper or food handler whether suspected of suffering from a communicable disease or not but has the potential to transmit disease is prohibited from handling food until he/she furnishes a certificate from a medical practitioner that he/she is healthy. (Tomlins and Johnson, 2004)
- Like other countries, Ghana needs to implement measures and regulations that would critically minimize and control the spread of waterborne diseases. Epidemiological and risk assessment approaches will undoubtedly boost our understanding of the occurrence, survival and

transport of these organisms. (Kwakyenuako *et al.*, 2007)

- The roles of all stakeholders, including consumers in ensuring food hygiene and safety, among food vendors selling cooked foods, raw foods and packaged foods need to be defined unequivocally. (Monney *et al.*, 2014)

7.3 Inspections and enforcement

- There is the need for monitoring to ensure that vendors with expired certificates are renewed. (Ababio and Adi, 2012)
- It is recommended that food inspection officers intensify their supervisory duties. (Ameko *et al.*, 2012)
- Regular screening of food handlers with a view to following up those found infected and getting them cured is crucial. (Feglo *et al.*, 2004)
- Pressure can be applied on vendors in the form of incentives such as certificates, transforming needs of the target group into opportunities (Karg *et al.*, 2010), and disincentives, like punitive fees and, in the extreme case, business closure. (Dwumfour-Asare, 2015; Karg *et al.*, 2010)
- Impact analysis of training programmes in achieving and sustaining behavioural change among food vendors should be carried out through regular monitoring. (Monney *et al.*, 2013)

8. Institutional development

Capacity building and harmonisation of institutional roles are needed.

8.1 Institutional harmonization

- Harmonisation of institutional framework and explicit definition of the roles and responsibilities of institutions for ensuring food hygiene and safety are very crucial. (Monney *et al.*, 2014; (Nicolò, 2012)
- Inter-sectorial collaboration is crucial. (Karg *et al.*, 2010)

8.2 Institution capacity building

- New rules usually also require capacity building. (Karg *et al.*, 2010)
- Raising man power through educational institution programmes for surveillance and supervision with stringent legal backing on penalties for non-compliance could also raise food safety standards whilst creating jobs for the public too. (Ababio and Lovatt, 2015)
- Training manuals should be developed for trainers to serve as a guide and ensure uniformity of subject matter at national level. (Monney *et al.*, 2013)
- Inspection forms can be updated (Karg *et al.*, 2010) A rapid assessment survey framework based on key food hygiene and safety indicators can be integrated into local authorities monitoring tools for fasten the assessment of food vendors on the field. (Dwumfour-Asare and Agyapong, 2014)

8.3 Provision of resources

- The Environmental Health and Sanitation Departments country-wide should be provided adequate resources (e.g. funds, human resources, logistics) to enhance their

monitoring and evaluation activities. (Monney *et al.*, 2013)

8.4 Strategic partnerships

- Institutions should establish early link with the educational sector (e.g. schools and universities) to facilitate the adoption of research outcomes and best practices in formal curricula. (Karg *et al.*, 2010)
- Public-private partnerships need to channel their investments into the street food sector in line with commitments to urban food and nutrition security, poverty reduction and employment creation. (Nicolò, 2012)

9. Vendor capacity development

Street food vendors are currently playing a key role in attaining urban food and nutrition security: this role has to be fully and formally acknowledged and further supported and expanded in order to ensure that this sector provides its services in an adequately regulated environment (Nicolò, 2012). With this aim, several actions should be undertaken to build vendors' capacities.

9.1 Training

- Awareness raising campaigns and training (on food safety and nutritional quality, marketing and sales techniques, sustainable practices that add value to production, among other issues) are essential to support street food vendors in up-scaling their activities (Nicolò, 2012).
- Behavioural change is needed among the stakeholders of the critical control points identified for health-risk reduction. Practical or logistical

knowledge is essential for adapting new behaviours (e.g. how to prepare the correct chlorine solution for disinfecting vegetables). Regular sensitization programmes, food safety and hygiene workshops and training for food handlers are then needed. (Ababio and Lovatt, 2015; Danikuu *et al.*, 2015; Monney *et al.*, 2013; Ababio and Adi, 2012; Ameko *et al.*, 2012; Feglo and Sakyi, 2012; Ackah *et al.*, 2011; Annan-Prah *et al.*, 2011; Odonkor *et al.*, 2011; Karg *et al.*, 2010; Andoh *et al.*, 2009)

- The scientific explanation of the reasons why the behaviour-change is important (e.g. how the chlorine works), may not be essential to achieve behaviour change as experienced in the Ghana hand-wash campaign. (Karg *et al.*, 2010)
- Training workshops can be combined with cooking courses or private-sector product promotions. (Karg *et al.*, 2010)
- Need for entrepreneur skills training for processors and vendors. (Tortoe *et al.*, 2013) Training sessions addressing issues regarding businesses management, accounting book keeping, investment options and development of entrepreneurial skills. The government and other private entities should help in this regard by providing competent tutors to hold such seminars in order to boost the operations of the sector. (Bobodu, 2010)
- Ideally, trainings should be carried out at no cost to food vendors or subsidized (Ababio and Lovatt, 2015; Monney *et al.*, 2013)
- A certificate should be awarded at the end of each training programme. (Monney *et al.*, 2013)

9.2 Social marketing

- Formal food safety education alone may not be adequate to secure safer street food hygiene. Instead, we find it crucial to understand vendors' and consumers' social and normative perceptions of food safety. In addition to educational and regulatory efforts, conventional and social marketing can play a significant role in understanding and facilitating behaviour-change. It is needed to explore how conventional and/or social marketing can support the desired behaviour-change towards the adoption of safety practices. Social marketing studies can help to identify related benefits that are valued, including indirect business advantages, improved self-esteem, a feeling of comfort or respect for others. Vendors might eventually change their behaviour for intangible incentives, like less pressure from authorities and the media that their current practices are bad for public health. (Karg *et al.*, 2010) Public health campaigns must take into account the emphasis on appearance and neatness when designing future communication strategies. Neglected aspects of neatness, such as good hand hygiene and cleanliness of kitchen facilities, especially, should be emphasized. (Rheinländer *et al.*, 2008)
- Safer production sites could get a brand name associated with accepted norms, such as 'clean' and 'tasty'. (Karg *et al.*, 2010)

9.3 Financial incentives and support

- To improve the livelihoods of street food entrepreneurs, support to expand and diversify their businesses can be achieved through access to credit.

There is a need for government intervention to create an environment conducive to microfinance institutions, as well as to provide affordable market premises for food traders. The banks and microfinance companies should also make the procedures short and also reduce the interest rate on the loans given out. It is recommended that the government institutions such as the Micro and Small Loan Center (MASLOC) as well as the National Board for Small Scale Industries (NBSSI) work together to improve access to credit for the street food vendors. (Nicolò, 2012; Otoo *et al.*, 2011; Bobodu, 2010; Karg *et al.*, 2010)

- Besides loans and ad hoc micro-credit interventions, specific social safety nets programmes can be developed. (Nicolò, 2012)

9.4 Tenure security

- Greater tenure security could facilitate investments in the business. (Karg *et al.*, 2010)

9.5 Associations and unions' role

- Existing associations should be strengthened and memberships promoted. (Karg *et al.*, 2010), and the creation of new groups (e.g. associations, co-operative unions) should be encouraged at the national, regional, district and local levels.
- Vendors associations need to become projects' main interlocutor when trying to reach out for as many vendors as possible. (Nicolò, 2012). Indeed, vendors association can ensure quick dissemination of information, and facilitate education, training, and promotion initiatives. (Monney *et al.*,

2014, 2013; Bobodu, 2010; Rheinländer *et al.*, 2008)

- Associations could ensure food vendors adhere to appropriate codes of practice in street food vending. (Monney *et al.*, 2014, 2013; Bobodu, 2010)

9.6 Cultural change

- A large number of the street food vendors believe in God. So whether or not they expand their business "is up to God to decide." It is advised that there will be a paradigm shift of the street food vendors in this regard. In order to rectify this mind-set, there should be a clear awareness from religious leaders in the country. During these sessions they could clarify to them their beliefs and coin them in a way that the supreme God only helps individuals who are ready to help themselves. (Bobodu, 2010)

10. Reduction of food contamination and poisoning risks

Street foods pose a health threat to the patron and efforts to reduce their level of contamination are recommended. (Feglo and Sakyi, 2012). To achieve this goal it is needed to improve the general sanitation of food handling, transportation, storage, display along the whole production-consumption chain.

10.1 Inputs control

- Because some microbial contaminants come from the ingredients with which the food is prepared, a careful

selection of food material to be processed is necessary to protect the consumer. (Annan-Prah et al, 2011)

10.2 Food washing

- Use of previously boiled water for washing vegetables may help reduce food contamination. (Feglo and Sakyi, 2012)
- Washing vegetables thoroughly and increasing the contact time in sodium chloride (NaCl) solutions will help reduce the amount or load of bacterial pathogens present on the surface of these raw vegetables. (Pesewu et al., 2014) Promote available disinfectants (bleach, chlorine tablets, potassium permanganate). (Karg et al., 2010)

10.3 Food handling and preparation

- Affordable low input devices to ensure proper food handling (polythene bags as gloves, use of ladles instead of bare hands to dish out food, etc.) cooking and warming would improve food vendors ability to meet demands for food safety from regulators and consumers. (Haleegoah et al., 2015; Nicolò, 2012)
- Water for preparing foods can be boiled, cooled and then used to prepare food like cocoa drink and Ice-Kenkey. (Feglo and Sakyi, 2012) The microbial load could be eliminated by pasteurizing Ice-Kenkey at 80 °C for 15 min. (Atter et al., 2015)

10.4 Food protection

- Food should generally be kept from sources of contamination (e.g. Solid

and liquid wastes, pests, flies, dust, fumes, microorganisms, etc.) (Tomlins and Johnson, 2004)

- Affordable low input devices and technologies to ensure proper food storage and display (glass and plastic containers to store foods, thermal containers) are available and should be used (Haleegoah et al., 2015; Nicolò, 2012)

10.5 Personal hygiene

- Both vendors and consumers should improve upon their personal hygiene consciousness by washing hands, especially after handling of currency notes. (Luure et al., 2015)

10.6 Food consumption

- Food items must be purchased when they are freshly prepared and hot. (Annan-Prah et al., 2011)

11. Vending sites and infrastructural development

11.1 Urban planning

- It is envisaged that re-structuring, facilitating and integrating street food vending into the urban developmental plans of the city would be of tremendous benefit not only to the city's administrators but more importantly the ordinary citizenry. (Nicolò, 2012; Amoah et al., 2006)

11.2 Structures and infrastructures

- Structures and spaces need to be specifically designed and dedicated to the vendors and their consumers.

These measures would not only avoid precarious hygienic conditions leading to outbreaks of food related diseases but also allow street food vendors to secure their customers base as they would not be forced to periodic displacements from their place of vending. (Nicolò, 2012)

- The metropolitan authorities should provide the necessary infrastructure to improve the safety of street-vended foods. Food vendors in Ghana should only be expected to operate from some designated places with proper facilities that ensure customer protection. (Ayeh-Kumi *et al.*, 2009) A way that government could re-organize the sector is by building a appropriate market places. These should be built before sacking the vendors from where they are apparently operating. (Bobodu, 2010)
- Vendors of selected food types (e.g. Fast foods, Kenkey, pastries, etc.) in selected sites of the metropolis shall prepare, handle and sell food in a structure approved by the relevant authority. (Tomlins and Johnson, 2004)

11.3 Basic amenities provision

- Government should give vendors access to basic amenities for ensuring that food is safe for public consumption (e.g. adequate and wholesome water supply; proper and efficient waste disposal systems and places of convenience; adequate ventilation and lighting or illumination; proper storage facilities). (Hiamey *et al.*, 2015; Nicolò, 2012; Karg *et al.*, 2010; Boadi and Kuitunen, 2005; Tomlins and Johnson, 2004)

12. Improvement and promotion of nutrition quality

- Fostering linkages between urban and peri-urban production of food with the urban vending sector, promoting the diversification of the food supply, introducing fortified foods and products to supplement or replace commonly consumed food items, are all viable paths to explore in order to improve the nutritional status of dwellers in urban context. (Nicolò, 2012)
- SFVs are an important platform to supply fruit and vegetables (FV) to the masses. Using them as a vehicle to promote FV consumption in Ghana has possibilities and they are a proven trainable group, having been trained on food hygiene courses in the past. (Aitken *et al.*, 2015)
- The growing evidence of high patronage of street foods by caregivers for their young children suggest the need for food-based interventions that incorporate strategies to improve the quality of street foods as a healthy complement to home-prepared foods for children. (Micah *et al.*, 2012)
- The high consumption of carbohydrate staples and little fruit consumption should be a worry for public health officials and nutrition experts. Specific interventions must be put in place to deliberately improve the nutritional value of street food (Hiamey *et al.*, 2015)

13. Consumer awareness raising and participation

Street food customers, as much as local authorities, have a stake in their own safety protection. Therefore, customers'

awareness about food-safety issues has to be increased through continuous sensitization programmes. (Ababio and Lovatt, 2015; Karg *et al.*, 2010)

13.1 Hand washing

- Education on the use of effective decontamination or washing methods before eating and improved hygienic practices at consumer level will contribute to reducing the risk associated with the consumption of contaminated foods. (Amponsah-Doku *et al.*, 2010; Andoh *et al.*, 2009)
- Public awareness of the fact that currency notes could be a source of infection and could be dangerous to human health should be created. Bank of Ghana should educate the public and enforce rules on proper ways of handling money. (Luure *et al.*, 2015)

13.2 Knowledge of risks related to specific foods

- Patrons of salads, especially street vended ones, should be made aware of the risk associated with consumption of such specific food. (Ameko *et al.*, 2012)

13.3 New costs / benefits perspective

- It is imperative that awareness is created among local clients that it costs more to treat food-borne diseases than to pay a bit more for hygienic food. (Annan-Prah *et al.*, 2011)

13.4 Customers as monitoring vectors

- Knowledge on food hygiene and safety principles will make customers able to

demand standard hygienic practices and compliance with regulations from street food vendors. (Dwumfour-Asare, 2015)

- It is imperative that consumers become well-informed on best practices for food hygiene and safety among food vendors in order to bring to the notice of authorities any observed deviations. (Monney *et al.*, 2014)

13.5 Participation in policy design

- Participatory approaches in national policy consultation processes in partnership and collaboration with consumer's associations, which are active in many West African countries, could play a fundamental role in helping identifying key issues to address. (Nicolò, 2012)

14. Further research

14.1 Epidemiological studies

- Research on food poisoning and other forms of food borne diseases, the causative organisms and vehicles of transmission, and control in the country. (Ababio and Lovatt, 2015)
- More data on pathogen concentrations is needed to refine Quantitative Microbial Risk Assessment (QMRA) estimates of disease burden. (Barker *et al.*, 2014)
- It is recommended that future studies should use large samples size to be able to isolate *Salmonella* sp. and other dangerous pathogenic bacteria if present in raw-mixed vegetable salad samples before they cause an outbreak. (Pesewu *et al.*, 2014)

- Research on other forms of food hazards including food allergens and sufferers in the population in addition to microbiology. (Ababio and Lovatt, 2015)
- In general, it is recommended to carry out more research on food safety in the regions apart from the capital region. (Ababio and Lovatt, 2015).

14.2 Public policy studies

- Further studies on inspectors' field visits. (Dwumfour-Asare, 2015)

14.3 Social and communication studies

Social marketing requires applied research to understand the needs, aspirations, values and everyday lives of the target audiences, and their perceptions of factors which might motivate or discourage them from adopting recommended technologies. Improved policies and related education might be milestones but often do not trigger behaviour-change. This situation calls for a stronger integration of social science research in the strongholds of engineering and epidemiology to address key adoption barriers. (Karg *et al.*, 2010)

14.4 Economics and labour studies

- Research examining the dynamics of street food enterprises and how they change and grow over time will provide pertinent information to further justify their contribution to economic growth. (Otoo *et al.*, 2011)
- Expanding the research to examine entrepreneurial activity in small towns and villages in rural areas could constitute further study. (Otoo *et al.*, 2011)

- Future research should further examine organizational structures, the position and role of different people (owners, apprentices) in these enterprises. (Otoo *et al.*, 2011)

Besides the further studies recommended in literature, recent internal consultations among FAO professional staff highlighted other important issues that should be also researched:

- linkages between urban local fresh food production and local agro-industry products, on one side, and the street food sector, on the other side. This could show the extent of local vegetables produced in urban areas supplied to SFVs over all vegetables used by them (including those sourced from supermarkets and traditional markets). Such studies will also enable the assessment of the level of contamination risks from these sources;
- comparison between the safety and nutrition quality of foods sold in the streets, in restaurants and in the house;
- comparison between itinerant and stationary street food vendors (their socio-economic profile; their goals and length of engagement, etc.);
- contamination levels of animal products (e.g. milk) used by street food vendors;
- assessment of the risk of chemical contamination of goat meat consumed with skin burned using cars tears;
- actual link between contamination levels and food poisoning occurrence;
- the link between street food consumption and obesity;

- the role of street food vending as a vehicle of job creation and poverty reduction;
- gender-related issues (e.g. gender-based discrimination among vendors; street violence, etc.)
- extent and type of involvement of children in the street food vending sector;
- social and cultural bases of the definition of street food operators as mere “vendors”.

15. Incorporation and implementation of recommendations

All in all, we did not find studies assessing whether, to what extent, and in which way the recommendations made over the years have been incorporated and implemented by the stakeholders.

In 2000, Ntiforo lamented that recommendations based on the few studies available at that time were never implemented because stakeholders were not directly involved neither were the findings passed on to the appropriate authorities. Very likely, despite the growing number of studies on the topic, the lack of communication and knowledge transfer between researchers and the stakeholders still represents a major barrier to the development of the sector.



Photo: Male vendors grilling meat on skewers at the beach in Accra, Ghana ©FAO/FAORAF

SUMMARY

In Africa, street food vending and consumption have proliferated in the last three and a half decades, especially in urban areas. Indeed, to poor urban dwellers, self-employment (often in the informal sector) often represents the only way to earn a living, and street food vending, in particular, represents one of the easiest and viable jobs, as it requires little start-up capital and no formal education. At the same time, the increased commuting distances and the faster living and working pace in the cities turn street food into the best answer to the demand for ready-to-eat, inexpensive, quick and nutritious food near the workplace among the growing urban low and middle working class.

Nowadays, African national and local authorities, and international organizations agree on the nutritional, economic, social and cultural importance of street food, but they are also aware of the critical issues associated to it, especially food safety issues and widespread informality of the sector.

A desk-top review and analysis of documents (e.g. scholarly articles, projects' reports, conferences and workshops' proceedings) analyzing and discussing the street food sector in Ghana was carried out. The major findings provided by these documents were edited analytically in these report, along with the recommendations that the authors have addressed to the relevant stakeholders to improve street food safety and nutrition quality, and vendors' livelihoods.

Findings in literature

As for the results, they allowed us to draw a picture of the phenomenon: the profile of the vendors, the characteristics of their commercial activities, the hygiene and safety conditions of foods, their nutritional quality, the related policies implemented by national and local authorities.

1. Street food vendors' profile and enterprises' characteristics

The number of street food vendors in Ghana is unknown. An estimated 15.000 vendors operate in Accra, employing more than 60.000 people. In more than 90% of the cases they are female, and their average age is 34. The majority of them attended at least basic formal schooling. Married SFVs usually account for the majority of vendors, and their households have on average 6-7 members.

Almost all the SFVs rely on personal or family money to fund the start up of their enterprises and to cover the operating costs when ongoing revenues are too low. Almost none consider borrowing capital from banks and microfinance companies because of cumbersome procedures and relatively high interest charged on the amount borrowed. Limited access to credit is a major barrier to the growth of the sector. Another barrier to the growth of the sector is the fact that most of the SFVs attributed their stagnation in operation to religious beliefs, stating that their success or failure is up to God. On average, SFVs have been engaged in SF vending for 6-8 years, 6 days per week, 10 hours per day. SFVs are mainly self-employed entrepreneurs; about one third of them employs on average 3 either paid or

unpaid people (often members of their family). They earn on average GHC 40 per day, that is, about five times more than the official minimum wage earned by public sector workers. Most of the revenues earned by SFVs in large cities are used to support their family needs (food, clothing, housing, etc.). A fair amount of the revenues is channeled into the education of children. Most SFVs are able to save. Savings are usually entrusted to Susu collectors rather than banks. The percentage of SFVs claiming they held a license is much higher (usually half and above) than the percentage of those who were actually able to prove their claim by providing documentary evidence (on average less than one fourth). The rates of vendors claiming to have a license are the same rates of SFVs who can provide a medical certificate (that is required in order to obtain a license to trade in foods in Ghana), which suggests that they might think this is enough to be entitled to operate.

2. Consumers and consumption

In the last two decades there has been an increased number of urban consumers in Accra who purchase a wide variety of foods away from home. Nonetheless, very few studies take into consideration street food consumers and their practices: some outlined the socio-demographic profile of consumers and analysed the factors shaping consumption practices; others studied the knowledge and perception that consumers have about street food safety; others calculated the nutritional intake deriving from street food consumption.

Consumption of street food does not only concern the urban poor but cuts

across all socio-economic strata, especially in urban areas. It is not clear whether consumers of street food are more males or females, while it seems that male eat street food more often than female, especially if they are single. Most of them have ages between 20 and 40. Individuals with higher education level eat street foods less frequently compared to the members with lower levels of education. Street food consumption is much higher (7 times per week) among individuals with low and medium income, and among unemployed people. Also the percentage of budget spent on street food over that spent on food in general is higher for low income households. School children largely relied on street foods.

The main reason driving consumers to patronize street food is “convenience”, that is, the availability and accessibility of street foods over space and time. Indeed, in large urban areas there are so many street food vendors operating round the clock that consumers can always find one within reasonable distances. Among the specific reasons offered under this domain were: reduced difficulty of preparing food, time saving, and lack of alternative. “Sensory appeal” (e.g. better taste, hunger) and “nutritional value” (e.g. opportunity to select from varied local dishes, opportunity to obtain a balanced diet) are also important factors driving consumers towards street food, especially for school children. It seems that over the years consumers have been less and less interested in price when it comes to buy street food.

3. Street food and nutrition

While the number of publications focusing on street food hygiene and safety is quite

large, those focusing on street foods from a nutritional point of view are just a few.

The importance of street food for the nutrition of the population in Ghana was first underlined by a 2000 study that showed that the mean calorie share provided by street foods or prepared meals purchased away from home was one-fourth of the total daily calories (higher for households in the lowest income group, indigenous households, female-headed households). A more recent study shows that one-third of the SFVs in Ghana sell fruit and vegetables, and they do it usually in response to customers' demand rather than based on awareness of the positive nutritional qualities of such products. Another recent study found that 80% of caregivers in rural communities purchased street food (mostly grain-based) for their child at least once a week, largely contributing energy, vitamins, metals and calcium consumed by children.

Overall, there seemed to be a penchant for carbohydrate staples over other types of foods sold in the streets in Ghana, mainly because of their low cost, availability and ease of preparation.

4. Street food hygiene and safety conditions

A significant number of studies show that the street food sector in Ghana has been characterized in the last fifteen years by food hygiene and safety (FHS) issues, and that these, despite visible improvements, still require a lot more work to be eliminated altogether.

High levels of biological, chemical, and physical contamination of food were found, representing a risk for the health of consumers in the short and long term.

Several factors along the whole production–supply–preparation–selling chain may be the cause of street food contamination. We can distinguish two different categories of contamination factors: *endogenous* factors (implying the direct responsibility of vendors) and *exogenous* factors (outside the control of vendors).

Contaminated inputs are the first risk factor that we find along the food production-preparation-consumption chain. Street food contamination can originate, at least partly, from raw materials sourced from independent small farmers and market traders: risks come from the use of unsafe or contaminated water to irrigate the vegetables, as well as from contaminated refreshing water used by market traders, or from contaminated or rotten meat sold in the markets. Contamination then can be caused by SFVs' unhygienic practices, unsafe storage, transportation, handling, and display of food, and use of inadequate cooking tools.

The participation of SFVs in food hygiene and safety training courses is generally low in Accra while it involves the majority of those operating elsewhere in the country, both in large and small-medium cities. SFVs generally show a high knowledge of food safety issues and proper food handling practices, and expressed basic biomedical knowledge and awareness of disease and pathogenic transmission via food and water. Compared to a few years ago, when SFVs showed overall insufficient hygiene and food handling practices, nowadays we see a significant improvement of vendors' personal hygiene and food handling practices: the majority of SFVs wear clean protective clothing (e.g. at least one item between

apron, hair cover, gloves), have clean and short nails and wear no jewels, and, maybe most important, wash their hands regularly while operating. The current fairly high tendency to wash hands among SFVs may depend on the fact that improved water sources are available, more than in the past, at most vending points. Nonetheless, contamination is lurking as, apart from washing their hands, some vendors tend to use the same water or water containers for other activities (e.g. washing cooking tools). Risks of contamination linked to poor hand washing are higher when street food vendors are carriers of diseases and gastro-intestinal infections, which occurs in a significant percentage of cases. Another major contamination factor linked to food handling is the concurrent handling of money and food, which is common practice among many SFVs.

That been said, we must note that some street foods are intrinsically more likely to be contaminated than others, due to both the nature of the ingredients and the preparation methods.

The surroundings of vending points are found to be clean in most of the cases. In Accra, in ten years, the use of trash bins among SFVs had a six-fold increase. Nonetheless, despite the effort by the vendors to keep their surroundings clean, the disgraceful conditions of the roads make hygiene still precarious: holes and missing asphalt in the road, and the typical uncovered sewages that line the edges of the streets of the cities create space for puddles of stale water, that were found in the proximity of many vending points. Food pests and dust (either coming from dirt roads or the harmattan) expose to contamination the food sold by one-third to one-half of the SFVs in Accra. The adequate protection of ingredients and foods from environmental contaminants by using glass containers is unevenly practiced from city to city, with higher rates (up to 60%) in Accra, and lower in Kumasi (down to 10%). Physical contaminants could affect the food not only at the vending point, but also during their transportation from the market or from home to the vending site.



Photo: Cooked meat inside a glass case at a food stall in Accra, Ghana ©FAO/FAORAF

About one half of the SFVs in Accra sell leftover food (showing a significant decrease compared to the past). A lower percentage is found in smaller cities. Not all of them can rely on a fridge to store leftovers overnight, and many of them at room temperature. Also the adequate reheating of leftovers (if needed) at the moment of re-sale is not practiced on a regular basis.

A further source of contamination is represented by cooking utensils, pots and pans. Although almost all SFVs prove to wash their tools diligently, thus reducing the risk of biological contamination, hazards can come from chemical contamination through the use of non-approved utensils made of unsafe materials (e.g. cooking pots produced by informal manufactured leaking heavy metal lead).

Finally, despite knowledge of the risks carried by street foods, actual harms to consumers' health are yet to be fully proven and understood. Follow-up studies proving actual connections between street food contamination and food-borne diseases are still very few, mainly due to difficulties in tracking vendors as well as consumers, and the lack of a food-borne disease reporting system.

5. Public policies

Neither at the national nor at local level, in Ghana there is no framework policy or law specifically regulating street food vending. The sector is instead regulated on the basis of a set of scattered rules drawn from several by-laws, each one addressing different aspects such as urban planning, labor, taxation, food control systems.

In 2010 AMA established that stationary trade is prohibited on the street, unless a street is designated as a "market". Itinerant trade ("hawking") is prohibited in any case. City guards are deployed along the prohibited areas. A special court was created to trial offenders who can be convicted to fines or even to imprisonment or communal labor.

Vendors need a license to legally trade in Accra. No comprehensive and detailed guidance of what is required in order to start a street food vending activity is given by AMA. In the attempt of correctly informing street food vendors on the licensing process for their activity, guidelines have been prepared by the Food and Drugs Authority (FDA). The process includes three steps: 1) get a "Development and Building Permit" (DBP) from AMA; 2) get a "Business Operating Permit" (BOP) from health inspectors of AMA's Environmental Health Department; the BOP must be renewed on a yearly basis, it is not transferable, and a fee is charged; 3) food and beverages handlers must have a valid personal Health Certificate issued by a recognized health institution. In order to obtain a license to handle and sell food in Ghana, there is no need to attend a HACCP course, which is mandatory in other countries.

The National Pensions Act provides voluntary membership to self-employed vendors, even informal ones. Vendors with employees must provide social security benefits to them.

Collecting income tax from street vendors has become a major challenge to the Revenue Agencies in Ghana, partly due to the invisible nature of some informal businesses and poor book keeping that makes it difficult to

determine the taxable income. At present, registered medium to small scale businesses pay monthly tax based on declared sales/profit, whereas petty traders are levied daily fixed rate tax ("ticket"). Taxes are levied on all businesses, regardless of their formal/informal status. As a consequence of the high rate of income tax evasion and the high number of unlicensed vendors, there is a lack of on-going public financial resources made available to national and local authorities to support the development of the sector. This creates a vicious circle discouraging vendors to regularly pay fees and income tax, since they would hardly benefit in terms of better working conditions, welfare and social security, and economic return.

As of food policies, the current situation is characterized by:

- a) outdated and inconsistent legislation at national, regional, district, metropolitan, municipal level;
- b) formal overlaps and ambiguity in institutional responsibility within the food control management framework, overcome by agreements between the main agencies in charge of food safety control (namely, GSB and FDA);
- c) authorities' logistical constraints (limited personnel with specific competence to carry out food controls; inadequate equipment) limiting the enforcement of by-laws, which translates into lack of thorough data and might facilitate corruption; as local authorities do not perform routinely controls, SFVs feel little urgency to formalize their legal status and to comply with the safety rules and standards; when inspections take place, SFVs perceive it as "harassment"; forced evictions and equipment seizure by local authorities are the most serious problem facing them; systematic evictions have proven ineffective and counterproductive in terms of food safety;
- d) laboratories are largely unable to monitor food-borne disease and provide thorough epidemiological data; media, instead, serve as the main source for reporting of food borne diseases;
- e) authorities' development interventions have mainly been limited to on-the-spot training of SFVs on food safety and hygienic standards; studies show conflicting results on the effectiveness of training courses; a lack of awareness of the social or health benefits of adopting the practice promoted is not necessarily the reasons for a vendor not to change his/her practice; other reasons are tradition, family pressure, community norms, time pressure, inconvenience, etc; moreover, the emphasis of training curricula exclusively on food safety and the limited attention given to business management seem not to effectively stimulate SFVs to enhance their practices;
- f) little has been done to enhance infrastructures and public supplies supporting the ability of vendors to put the knowledge acquired into practice. Attempts to relocate vendors within market areas designated by the authorities have largely failed so far.

All in all, public interventions and positive outputs remain scattered and have not become systematic actions mainly due to institutional and financial gaps.

After almost two decades during which Ghana food policies had remained

almost unchanged, in 2016 the Government of Ghana adopted a new “National Food Safety Policy”, supported by WHO and FAO, aiming to achieve the following objectives:

- a) review or amend when necessary existing food legislation and enact new laws;
- b) harmonize institutional cooperation among relevant stakeholders;
- c) coordinate and strengthen existing laboratories and strengthen the food borne diseases surveillance system;
- d) provide food safety information, education and communication along the food value chain, and encourage the use of HACCP.
- e) Ensure the provision of appropriate infrastructure for effective food safety management.

Recommendations from literature

Recommendations were made by the authors of the selected studies, addressing stakeholders to improve street food safety and nutrition quality, vendors’ working conditions and livelihoods, public policies. The following are the main recommendations that have not yet found concrete response to date.

6. Laws and regulations development and enforcement

In general, it is recommended that updated by-laws regulating all dimensions of street food vending should be enacted and enforced to meet its current characteristics and conditions, avoiding over-regulation and involving all the stakeholders in a participatory

dialogue for policy formulation. In particular, recommendations were made to develop and enforce Laws and regulations in relation to the following issue:

- more clarity on the functioning of the licensing process should be a priority action;
- every vendor, helper or food handler shall be required to undergo basic training in food hygiene, personal hygiene, food handling and storage and food laws prior to licensing;
- the regulatory authorities should enact new laws on food hygiene and safety practices to eradicate food contamination and infection. One of the main rules that should be enacted is the adoption of HACCP control points as a legal requirement;
- it is recommended that food inspection officers and environmental health inspectors intensify their supervisory duties;
- pressure can be applied on vendors in the form of incentives and disincentives;
- impact analysis of training programmes in achieving and sustaining behavioural change among food vendors should be carried out through regular monitoring.

7. Institutional development

Capacity building and harmonisation of institutional roles are needed.

- Explicit definition of the roles and responsibilities of institutions;
- inter-sectorial collaboration is crucial;
- raising man power through educational institution programmes for surveillance and supervision;

- standard training manuals should be developed for trainers at national level;
- standard inspection forms should be developed for trainers at national level;
- the Environmental Health and Sanitation Departments country-wide should be provided adequate funds, human resources, logistics;
- institutions should establish early link with the educational sector (e.g. schools and universities);
- public-private partnerships should be created to channel investments into the street food sector.

8. *Vendor capacity development*

- Awareness raising campaigns and training (on food safety and nutritional quality, marketing and sales techniques, sustainable practices that add value to production, among other issues) are essential to support street food vendors in up-scaling their activities;
- in addition to educational and regulatory efforts, conventional and social marketing can play a significant role in understanding and facilitating behaviour-change;
- to improve the livelihoods of street food entrepreneurs, support to expand and diversify their businesses can be achieved through access to credit;
- specific social safety nets programmes can be developed;
- greater tenure security could facilitate investments in the business;
- existing associations at the national, regional, district and local levels should be strengthened and memberships promoted as they can ensure quick dissemination of

information, and facilitate of education, training, and promotion initiatives; they can also play a monitoring role on their members.

9. *Reduction of food contamination and poisoning risks*

Street foods pose a health threat to the patron and efforts to reduce their level of contamination are recommended. To achieve this goal it is needed to improve the general sanitation along the whole production-consumption chain:

- inputs control and careful selection;
- thorough food washing, also using available disinfectants;
- food handling with plastic gloves and ladles;
- food preparation with boiled water when needed;
- protect food stored and on display using glass containers;
- wash hands thoroughly;
- food items must be purchased when they are freshly prepared and hot.

10. *Vending sites and infrastructural development*

Re-structuring, facilitating and integrating street food vending into the urban developmental plans through:

- structures, infrastructures and spaces specifically designed and dedicated to the vendors and their consumers;
- access to basic amenities to ensure that food is safe for public consumption (e.g. adequate and wholesome water supply; proper and efficient waste disposal systems, etc.)

11. Improvement and promotion of nutrition quality

- Fostering linkages between urban and peri-urban production of food with the urban vending sector;
- promote the diversification of the food supply, introducing fortified foods and products to supplement or replace commonly consumed food items;
- use vendors as a vehicle to promote fruit and vegetables consumption

12. Consumer awareness raising and participation

- Customers' awareness about food-safety issues has to be increased through continuous sensitization programmes; knowledge on food hygiene and safety principles will enhance customers' own practices, and will enable them to demand compliance with regulations from street food vendors, and to bring to the notice of authorities any observed deviations;
- consumers associations should participate in national policy consultation processes to help identifying key issues to address.

13. Further research

Further studies were recommended in the following areas: epidemiology, policy, communication, economy and labour. Among the many issues that still need to be addressed by researchers, some are prioritized:

- research on food poisoning and other forms of food borne diseases, the causative organisms and vehicles of transmission, including food allergens

and sufferers in the population in addition to microbiology;

- a stronger integration of social science research in the strongholds of engineering and epidemiology is needed to address key adoption barriers;
- research on enterprises' economic profile, dynamics, and strategies;
- more research in the regions apart from the capital region, in rural areas, and in smaller towns is needed.

Besides the studies recommended in literature, recent internal consultations among FAO professional staff highlighted other important issues that should be further researched:

- linkages between urban local fresh food production and local agro-industry products, on one side, and the street food sector, on the other side. This could show the extent of local vegetables produced in urban areas supplied to SFVs over all vegetables used by them (including those sourced from supermarkets and traditional markets). Such studies will also enable the assessment of the level of contamination risks from these sources;
- comparison between the safety and nutrition quality of foods sold in the streets, in restaurants and in the house;
- comparison between itinerant and stationary street food vendors (their socio-economic profile; their goals and length of engagement, etc.);
- contamination levels of animal products (e.g. milk) used by street food vendors;
- assessment of the risk of chemical contamination of goat meat consumed with skin burned using cars tears;

- actual link between contamination levels and food poisoning occurrence;
- the link between street food consumption and obesity;
- the role of street food vending as a vehicle of job creation and poverty reduction;
- gender-related issues (e.g. gender-based discrimination among vendors; street violence, etc.)
- extent and type of involvement of children in the street food vending sector;
- social and cultural bases of the definition of street food operators as mere “vendors”.



Photo: Food stall in Accra, Ghana ©FAO/FAORAF

CONCLUSIONS

One of the main objectives of the 2013-2016 Country Programming Framework (CPF), agreed upon by FAO and the Government of Ghana, is the enhancement of the ongoing efforts at improving good practices among street food vendors with support for raising consumer awareness on food safety. Moreover, FAO promotes the development of nutritional quality of street foods sold in the Country, and the livelihoods and working conditions of all street food vendors.

To achieve these goals, **a four-step strategy** is suggested:

1. New regulations should start from a **revision of licensing / registration procedures** to encourage street food vendors to formalize their status; such a procedure must be as easy as possible and recognize, to a certain extent, the historically rooted informality of the sector. In practical terms, registration of vendors should not be perceived by them as forced and compulsory, but rather as something they can benefit from, first of all in economic terms, as well as in terms of institutional and social recognition.
2. A more **effective taxation system** is needed. Such system, as much as the registration / licensing procedure (see 1.1), should not be perceived by vendors as forced and compulsory, but as something they can benefit from in terms of short term economic return, better working conditions, welfare and social security. The new system should be fair and efficient.
3. A better and more **efficient monitoring system**, including **food-**

borne disease early warning and crises management mechanisms must be built. An efficient public monitoring system providing thorough, accurate, timely and policy-relevant data on street food vending in Ghana, must be based on the achievement of the previous three objectives: harmonization of roles and rules (Who is in charge of inspecting? Based on which standards?); formalization of vendors' status (by registering, vendors become traceable); effective tax system (funds enable to overcome practical constraints on the ground when it comes to inspecting and enforcing by-laws, such as limited personnel with specific competence to perform the controls coupled with inadequate and insufficient equipment and logistic support). This been said, a really efficient (that is, timely updated and detailed) monitoring system should be as decentralized as possible, meaning that data collection and reporting should be carried out involving the largest possible number of agents (both public and private ones) in a coordinated way.

3.1 Consumers must be encouraged to participate actively in the monitoring and reporting of the safety and hygienic conditions of vendors and foods, as well as on suspected food-borne diseases. To do so, two objectives must be reached:

- a) **provide communication channels** (e.g. hotline) to specifically report consumers who suspect being poisoned from street food;
- b) provide **tangible incentives** (e.g. prizes, recognitions, etc.) to the consumers who

participate actively in the monitoring and report system.

3.2 Existing private and public laboratories and clinics must be **strengthened and coordinated to create** an efficient surveillance system. Some practical actions that could be undertaken to achieve this objective include:

- a) development of **shared digital records** of patients;
- b) **lower fees** for patients actively participating in the monitoring and reporting of food-borne diseases.

4. By achieving objective 1 (registration of all vendors), 2 (sustainable financial resources) and 3 (efficient surveillance system), authorities will be able to:

4.1 Plan and implement more **targeted and efficient food safety and nutrition promotion and education along the nutrition sensitive food value chain** (from farmers to market traders to street vendors) based on the detailed and updated information available:

- a. Urban food systems policies and programmes should include the prevention of the double burden of malnutrition through nutrition education and

mass media campaigns targeting consumers and street food vendors. A detailed map of registered street food vendors including information and data about the type of foods that they supply will allow a **targeted promotion of “healthy” food** (e.g. fruit and vegetables) in areas where they are less sold.

- b. Authorities will be able to tackle more efficiently the endogenous factors causing food contamination (e.g. unsafe food handling practices; vendors’ personal hygiene; etc.) by **developing human capacity** in specific areas that are reported to be more at risk, especially encouraging the use of standard food safety management systems (e.g. HACCP) and balanced diets.

4.2 Implement **targeted provision of appropriate structures and infrastructure** (e.g. development of the road surface, coverage of open-air sewers, construction of standard kiosks, etc.) for effective food safety management and healthy food environment in areas where it is more needed based on timely and detailed information.

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In Africa street food vending and consumption have proliferated in the last three and a half decades, especially in urban areas. People who face barriers to the formal wage labour market find in street food vending a viable income option, as it requires little start-up capital and no formal education. In the meantime, the increased commuting distances and faster living pace in developing cities turn street food into the best option among the growing urban low and middle working classes looking for inexpensive, quick and nutritious food out of the house. Despite its nutritional, economic, social and cultural importance, street food in Africa is undermined by food safety issues, poor nutritional variety, widespread informality of vendors, and policy gaps. Major findings provided by existing literature throughout the last two and a half decades are analysed, along with the recommendations that the authors made to key stakeholders to improve policy framework, street food safety, nutrition quality, and vendors' livelihoods and working conditions.

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