

5. Quantification of marketing channels for lettuce¹

This chapter provides qualitative and quantitative information on the distribution pathway of lettuce produced in Kumasi and Accra from the farm to the consumer. The data show the contribution of irrigated urban farming and the size of the beneficiary group, which is also the group at risk from crop contamination.

5.1 Background and objectives

On the background of contaminated vegetables from urban agriculture, the objective of this chapter is to present the different lettuce distribution channels and to categorize the groups of sellers and consumers, in order to identify entry points and target populations for risk reduction programs. To get an impression of the dimensions of the lettuce market and its consumer groups, an attempt was made to estimate the total amount of lettuce produced and the size of lettuce consuming population.

5.2 Details on surveys

In Accra, six central markets (CM) and five neighborhood markets (NM) were visited, whereas in Kumasi the three existing main markets (Central Market, Railway Market and Asafo Market) and 12 neighborhood (or community) markets were included in the survey. On the markets, dealers who sell lettuce were interviewed. Whenever a customer was met buying lettuce from one of these dealers, they were also interviewed. This procedure allowed the determination of the relative importance of each customer group. For each market, general information was collected from dealers. These include the average price of lettuce heads/sacks and the total number of wholesalers and retailers on that particular market.

In addition to these activities, several urban vegetable farms were visited, both to interview farmers and to meet with dealers who buy and harvest lettuce on the farms. Further, a number of samples of the sacks used to carry the harvested lettuce to the markets were weighed.

To assess the functionality and importance of national trade with lettuce, the major transition points where lettuce was sent to or received from other cities were visited.

¹ This chapter was in large parts contributed by Manuel Henseler and is based on a study carried out in a project of the CGIAR Challenge Program for Water and Food.

In order to follow the distribution chain of lettuce, it became necessary to carry out a further survey among fast food sellers. As part of this study, 133 and 244 stands were visited in Accra and Kumasi respectively. In Accra, 83 fast food vendors who served lettuce at that time were interviewed while in Kumasi, 144 fast food vendors were equally interviewed. Likewise, 161 and 212 fast food customers were interviewed for Accra and Kumasi, respectively. In addition, 34 fast food stands were also visited in five different suburbs of Accra, in order to assess the origin of their lettuce, to discover their washing habits and to calculate the average weight of lettuce in one fast food meal. Therefore, interviews were carried out with the sellers and average size salad portions were purchased. The salad samples (N=20) were taken to the laboratory, where the lettuce was sorted out and weighed (Henseler et al., 2005). Chemical analyses were already carried out in a more comprehensive survey (Amoah et al., 2005, 2006b). Based on the statistics of Accra Municipality and Ghana's Food Research Institute, the number of fast food sellers in Accra selling food known for its lettuce supplement was estimated. About 90 fast food vendors in different parts of the city were visited at different times in a day and the absolute number of people who buy food with lettuce per day (in contrast to other food or the same but without lettuce) were recorded.

Definitions (used for this survey):

-*Wholesalers* were defined as dealers who buy large quantities and concentrate on one or very few sorts of vegetables. However, distinction between wholesalers and permanent retailers is often not easy as they often show mixed behaviour (also crop- and season-dependent).

-*Permanent Retailers* have a permanent stand on a market to display and sell their produce.

-*Independent Vegetable Dealers* have a permanent stand but are not located on the official market.

-*Mobile Retailers* do not have a permanent stand but rather roam around with their produce or temporarily install themselves at certain sites.

-*Fast food stands* are stationary street food vendors that sell ready made food. This survey concentrated only on stands selling fried rice, plain rice, jollof rice, so called waakye rice and fried eggs. Traditional "*chop bars*", who serve so called kenkey, fufu, banku etc. were not included, as they do not contain lettuce. [for information on these dishes please see, for example: www.ghanaweb.com/GhanaHomePage/food/]

5.3 Marketing channels and food flows

Traditional marketing structures

Wholesale marketing of exotic vegetables, which are *produced in peri-urban areas*, takes place at certain distribution points on specific days during the week. In Kumasi, for example, traders from the city and distant traders from Accra, Cape Coast, Obuasi and Takoradi-Sekondi come for business. The presence of traders from beyond Kumasi can influence market prices as they make better offers (Cornish and Aidoo, 2000). Farmers send their produce to various distribution points relatively early in the morning (normally by 5.30 am), where wholesalers, retailers and hawkers converge to purchase these vegetables. In addition to the three main markets in Kumasi – Central Market (Kejetia), Asafo and Sofoline- there are other small sale points located at strategic points within the city. Once the local market has been satisfied on these two days and the distant traders are gone, the market for exotic vegetables on any other day is small and prices highly erratic (Cornish et al., 2001). A significant proportion of the exotic vegetables *produced in the city* is sold at the farm gate (i.e. directly to wholesalers or traders).

While many sectors of agriculture in Ghana are being financed either by the government or external aid, urban farmers specialize in market production and can only rely on self-financing (usually to start the business) or market women who can provide funds for the purchase of input (especially seeds and chemicals). These women can be ‘middlemen’, wholesalers or actual market sellers. They visit the urban farms and reserve beds of vegetables in advance, thus financing the venture. The contract is verbal. The price per bed depends on the season, crop, and the size of the bed (approx. US\$1.4-3.6 per bed). Farmers are not allowed to sell the vegetable to any other person. The total amount of money received may differ from the agreed figure as demand and supply might have changed during the growing period. All the farmers complain about this dependency on the traders.

When interviewed, vegetable wholesalers in Kumasi stated categorically that they preferred going to the farms within the city to buy fresh vegetables without having to pay intermediate and transportation costs to middlemen. If the type and quantity they need could not be acquired on the farms, the rest is procured from the distribution centers (see Figure 4.2).

Common bottlenecks of this system are:

- poor price information;
- low number of farmers associations and limited capacity to lobby;
- lack of cold transport and storage (inadequate transportation);and
- lack of safe water and hygiene in markets for handling of produce.

Alternative marketing strategies

There are examples of urban farmers who have broken from this dependency. A case in point as reported by Danso and Drechsel (2003) is a small group of 5-7 farmers within the “La” area in Accra who farm around a more or less treated wastewater pond, which belongs to the Military Authority of the adjoining “Burma camp”. There is no formal agreement between these farmers and the authorities. Farmers regularly complain about water shortage during the period of discharge because its caretaker uses the wastewater from the pond for aquaculture.

There are two senior farmers in the group: one supervises crop production, while the other markets the vegetables. Also, there are 3-5 junior members and these are in charge of bed preparation, cultivation, watering of crops, spraying of pesticides and harvesting of produce. The marketing manager is responsible for input supply and marketing of the produce and all the necessary farming information concerning production techniques and marketing strategies. He has a long history in trading of non-agricultural commodities from Nigeria to Ghana, but has never worked as a farmer before he started cultivation in the La area.

At peak production, each of the 3-5 laborers is supposed to have up to 100 beds under cultivation. According to the Marketing Manager, their cropping pattern depends completely on the demand for a particular product at a particular time. He has studied the market in order to know when to produce what to meet demand peaks and has come up with a corresponding commodity chart:

Crop	Cropping period
Lettuce	March – April
Cabbage	April – June
Sweet pepper	August – November
Spring onions	September – December

Source: Emmanuel Opare, pers. communication.

As many vegetables are grown in short rotation (e.g. lettuce can be cultivated 9-11 times a year) flexibility counts a lot. A typical cropping pattern is: onions, green pepper, lettuce, which is rescheduled every three months.

Marketing of the vegetables is carried-out in two ways: a greater portion of the produce is sent to certain vegetable markets in Accra while the remaining is sold on-farm per bed. During

high demand periods, the marketing manager purchases from other producers at different sites in order to improve his gains but also to provide sufficient produce to meet the sellers' demands. Thus, he is not only bypassing middle-men but also taking over their function.

The leaders pay themselves a monthly wage of US\$57 each and US\$29 each to the other five members. A simple input-output calculation carried out by the farmers indicates that there is a quarterly net profit of US\$286 excluding the monthly wage. This is used to buy the necessary input for the next cropping. In addition, these farmers manage to have a special budget, which is used only when there is loss in production or a member of the group has a problem (family, health, funeral, etc).

5.4 Food flows

The analysis of the interviews with lettuce farmers, dealers and their customers allowed compilation of information on lettuce marketing channels into flow charts (Figures 5.1 and 5.2). The charts visualise the flow from the sources of lettuce (top), through its distribution pathways (center) to the target groups, who finally buy the lettuce on the market (bottom).

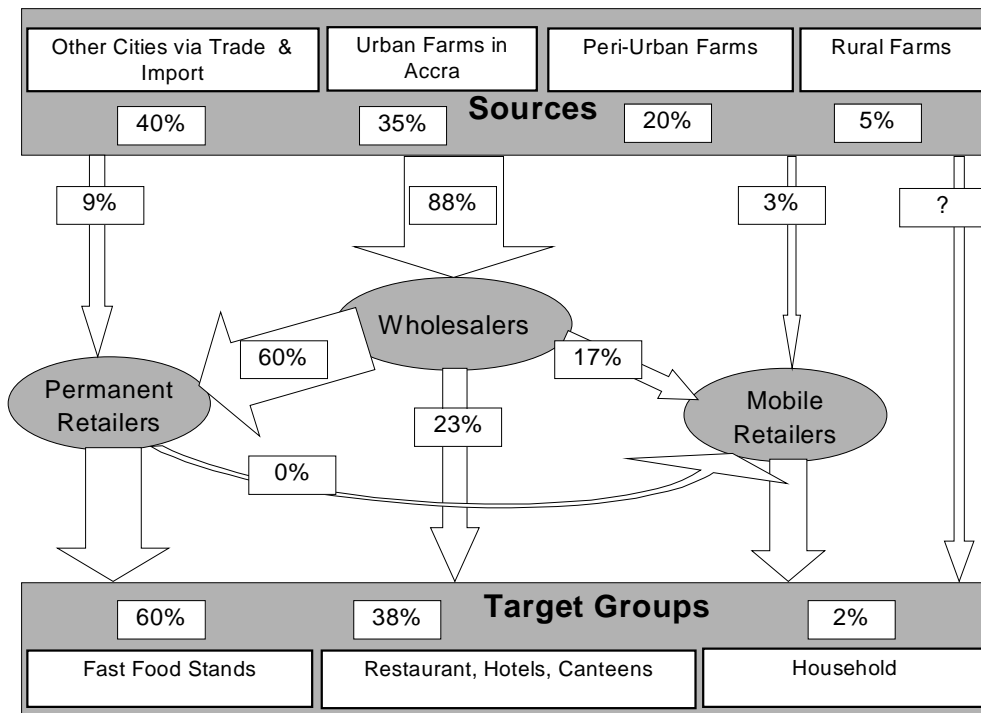


Figure 5.1: Flow chart of lettuce distribution in Accra (Henseler et al., 2005).

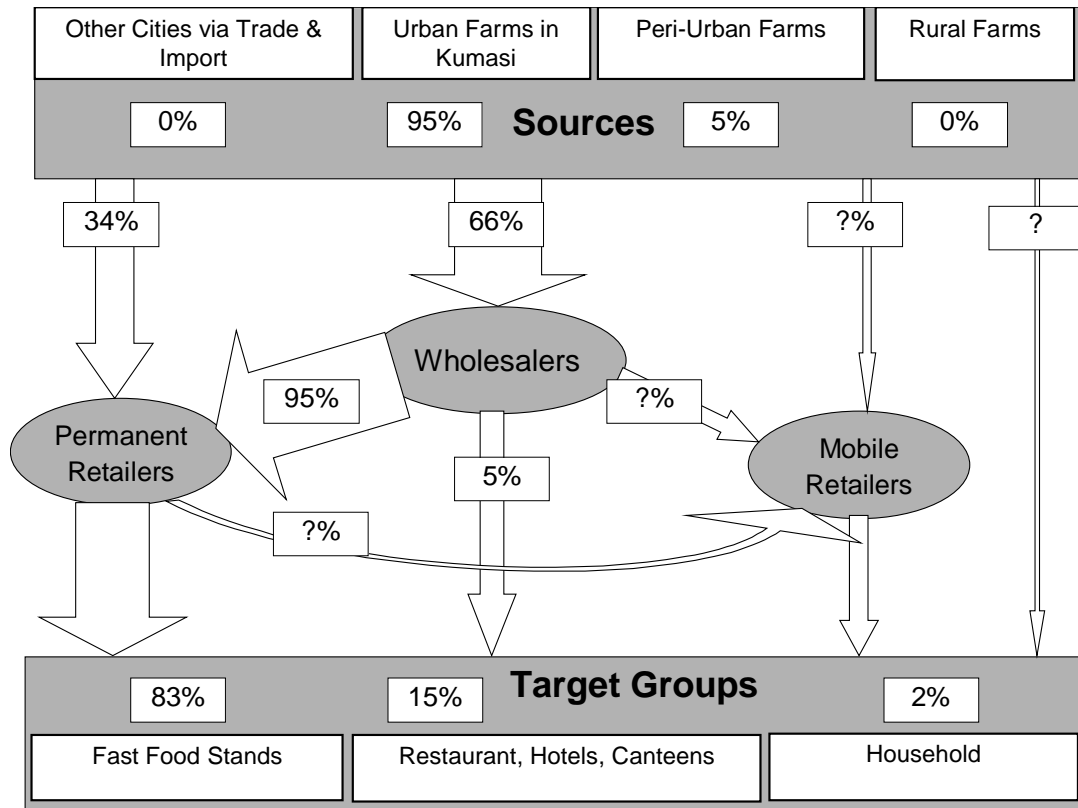


Figure 5.2: Flow chart of lettuce distribution in **Kumasi** (Henseler et al., 2005).

National Trade and Import of Lettuce

The major sources of lettuce in Accra are urban farms in Accra and other cities (Figures 5.1 and 5.2). *Trade and Import* means in most cases lettuce harvested at farms from urban Kumasi. In a few cases Aburi and Koforidua in Ghana and Lomé in Togo were mentioned as sources. A large fraction of the lettuce coming from these cities is organised by a small group of 7-10 female wholesalers. They bring their produce (5-10 sacks each) in public buses (1.1 USD fee per sack) or lorries to Accra's Agboghloshie market and sell it there for 16 to 39 USD (depending on the season) to other wholesalers and retailers. Agboghloshie market therefore plays a crucial role in lettuce distribution in Accra. One of such sacks weighs in average 50 kg (wet weight). Sacks used for sales within Kumasi are smaller and are carried on metal pots (average of 30 kg lettuce per sack). These sacks are sold in Kumasi for 3 to 13 USD, depending on the season. Some wholesalers in Kumasi bring their produce to local bus stations where they sell it to other wholesalers. These carry the lettuce in lorries or buses to Accra, Takoradi/Tarkwa, Cape Coast and other cities in Ghana (Figure 5.3). Lettuce from

Togo is transported with lorries that carry also other vegetables, including carrots and spring onions.

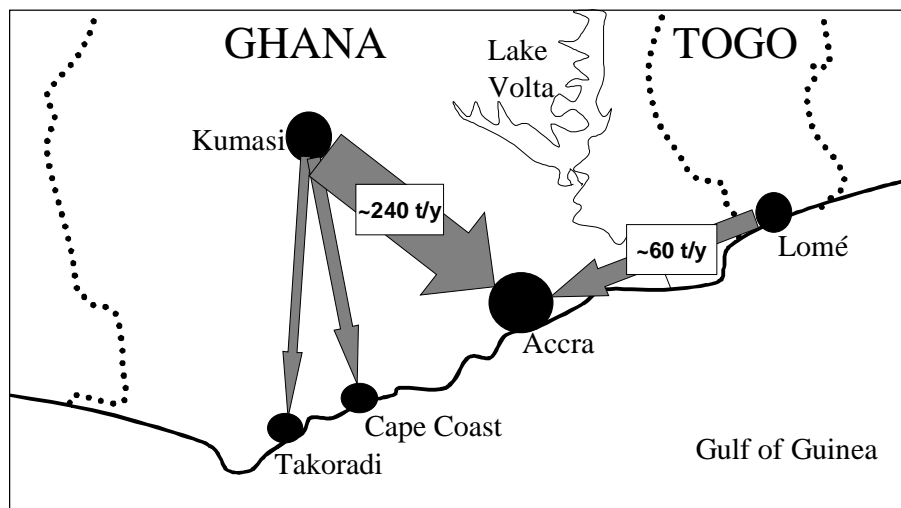


Figure 5.3: Import and national trade of lettuce in Ghana.

On market days (Mondays and Thursdays), approx. 50 sacks are brought to Agboghloshie market, mostly from other cities. On Tuesdays, Fridays and Saturdays, less lettuce (approx. 5 sacks) arrives, whereas on Wednesdays and Sundays, the local supply is allowed to dominate the market and hardly is any lettuce brought to Agboghloshie from other cities. Based on these numbers, a total of over 300 t of lettuce per year is brought to Agboghloshie market from these sources. There are probably also smaller markets in Accra for the wholesale of lettuce.

Lettuce from Urban and Peri-urban Farms

In Kumasi, 95% of the lettuce came from urban farms. In Accra 35% were from urban sources within Accra, whereas a reasonable amount (approx. 20% of total lettuce on the market) also came from peri-urban farms. Rural farms obviously contribute very little to lettuce supply in the two cities, probably due to its easily perishable nature. Since the lettuce brought from other cities has its origin mostly in urban farms, it is assumed that this source (“irrigated urban agriculture”) accounts for about 70% (in Accra) and 95% (in Kumasi) of the total lettuce sold on the cities’ markets.

The importance of the different sources of lettuce certainly varies during different seasons. During the major dry season in Accra (November to April), more lettuce is brought from other cities. The shares of the different external sources (i.e. Kumasi and Lomé) again depend on the climatic conditions obtaining in those areas. The present survey was conducted at a time, when Accra had a dry weather, whereas Kumasi was already in its rainy season, which could explain the large share of externally grown lettuce on Accra's market. The situation during other periods would have to be assessed in a repetition of this survey in different seasons.

Lettuce Distribution Pathways

In both investigated cities, the major distribution pathway is from farm gate to wholesalers, from wholesalers to permanent retailers and from retailers to the final target groups (Figures 5.1 and 5.2). Based on the information gathered on the markets, an estimation of the number of lettuce dealers in the two cities was made. Assuming there are 7-8 central- and 43 neighborhood markets in Accra (modified from De Lardemelle, 1996), a total number of 40 wholesalers and 400 permanent retailers was calculated (excluding *Independent Vegetable Sellers*). Due to the outstanding importance of the Agbogloboshie Market in vegetable trade, this market was considered as a separate type of CM. For Kumasi, based on the 3 larger and 18 neighborhood markets, about 20 wholesalers and 160 permanent retailers were estimated. In Kumasi, hardly were there any *Independent Vegetable Sellers* found.

The importance of mobile retailers is uncertain and difficult to determine, as they are hard to spot. In Accra, 21 of them were found during this survey, whereas in Kumasi no mobile retailers were spotted at all.

Total Amount of Lettuce traded in Accra compared to Kumasi

The total amount of lettuce handled and purchased in the two cities was extrapolated based on amounts, the stratification of traders and number of traders. An alternative assessment was based on areas and production figures.

The total lettuce production during dry season in urban and peri-urban Accra ranges between 900 and 1000 t/y. Another 300 t/y are added from other cities summing up to approximately 1250 tons of lettuce per year purchased and consumed in Accra.

For Kumasi, it can be calculated on the basis of cultivation area and information on productivity that about 1000 t of lettuce is produced per year. The market turnover was estimated as 850 t/y. Since large quantities of lettuce produced on Kumasi's urban farms are

transported to Accra and other cities without ever going to Kumasi markets, this difference seems to be justified. Further, it agrees with the figure calculated by Leitzinger (2000), who estimated a total lettuce consumption of 615 t/y in Kumasi. His survey was based on interviews on household-level. It can be confidently expressed that nearly all lettuce actually consumed in Kumasi is also produced there.

5.5 Customers and consumers

The largest client of the lettuce marketing chain are the fast food sellers, buying 60% of the total lettuce in Accra and a greater 83% of the lettuce in Kumasi. Restaurants, hotels and canteens buy 38% of the total lettuce traded in Accra and 15% in Kumasi. Private households in Accra and Kumasi rarely purchase lettuce, making up for only 2% of the total lettuce sold on the assessed markets. This reflects the fact that lettuce is not part of the traditional Ghanaian diet. It is certainly possible that especially upper class households buy lettuce rather from *independent vegetable dealers* or from *supermarkets*, which were not covered in this present survey. However, there are only very few supermarkets (all in Accra) that sell fresh vegetables. A rapid assessment in two typical (upper class) suburbs showed that the share of households would still remain in the 2-4% limit when compared with the quantities bought by fast food sellers, canteens and restaurants.

- Fast food stands

Almost all fast food stands purchase their vegetables from markets, i.e. not at farm-gate. In fast food stands, lettuce is normally mixed with other vegetables like cabbage, carrots and onions, with cabbage and carrots also mostly coming from urban farms. The content of lettuce in the offered meals varies. Most fast food stands serve lettuce as a side dish along with fried rice, plain rice, so-called waakye rice or with fried eggs; in few cases also with jollof rice or bread.

Sizes and appearances of the stands vary. Most commonly, they consist of a square shaped wooden box with a small opening in the front to sell the dishes. Other stands simply have a table and a few pots or thermo-boxes for the food. The (home) ready-made salad is usually stored in plastic plates and sometimes covered with cellophane foil.

Dr. P. Johnson of Ghana's Food Research Institute (NRI/DFID/FRI, 2000) estimates from field surveys that there are approximately 15,000 street food vendors in Accra. According to AMA statistics gathered from different suburbs, about one third of the registered vendors sell food known for its salad (lettuce and/or cabbage) supplement mostly from urban agriculture.

A survey among 90 sellers from this group showed that on average 50 units per fast food seller are sold with a salad component per day. This gives a total of about 250,000 units or fast food consumers; certainly a rough estimate. About 60% (or 150,000 meals) of these units contain lettuce, the others only cabbage and other vegetables.

Alternatively, we estimated the number of fast food consumers by considering the total amount of lettuce traded on Accra's markets (950 t/y), and extracting the fraction that goes to fast food stands (60%) and dividing it by the average weight of the lettuce in one fast food dish (12g), about 130,000 fast food meals with lettuce are sold per day. Combining both assessments, it seems that about 130,000-150,000 units of lettuce are served per day.

Under additional consideration of cabbage and spring onions, it can be assumed that in Accra everyday, probably more than 200,000 people consume uncooked vegetable outside their household. If we consider also canteens and restaurants another 80,000 beneficiaries from urban agriculture are possible. However, this large group also comprises the part of Accra's population at risk of food contamination.

Although sellers claim to wash their vegetables with tap-water, the washing methods and procedures described by them are in most cases not sufficient to secure decontamination of lettuce according to laboratory test by IWMI (Amoah, unpublished). It is therefore not surprising that salad from street food vendors was found to be contaminated with pathogens (Mensah et al., 2002). A perception study conducted in Kumasi (Olsen, 2006) shows, however, that street food vendors are convinced that they have eliminated risks by their practices of washing lettuce. For health campaign to be effective it is important to target these beliefs of risk-control and eradicate the misunderstanding of safe practices related to washing of lettuce, safe food temperatures etc.

- Consumers

Street food containing lettuce is available in the areas of all income groups, with relatively more frequent lettuce supplement in low-income areas. Customers are mostly males (70%) and buy 3-4 times a week. Like the typical urban dweller, most live in low-class (50%) and middle-class (ca. 38%) areas, and often work in the small-scale private sector, but can also be businessmen as well as students. Some of the fast food with lettuce supplement belongs to the cheapest food available in town attracting the poor and their dependants, as stated by Essamuah and Tonah (2004).

Consumers translate their general risk awareness into decisions by selecting food vendors they have personal trust in through the physical appearance of their stand and food.

5.6 Conclusions and strategies for improved hygiene

The survey has confirmed that the majority of the lettuce coming to urban markets has their origin in urban farms. Many of them have only access to contaminated water for irrigation. While there should be the awareness of the potential health risks to consumers, it is also important to realize the important role of this new and growing economy to the city's food supply. In Accra, at least 200,000 people benefit everyday from vegetables produced in urban agriculture. Both benefits and risks should therefore be taken into account when intervention strategies are discussed.

It has been shown that although more direct pathways exist, the majority of lettuce distribution from farm gate to customers runs through the urban markets.

Further, this survey has identified the fast food sellers as the major customer group of the lettuce market. In order to reduce the consumers' health risk resulting from contaminated lettuce, it is pertinent to address fast food sellers through health campaign. Also, restaurants and canteens, which sell a reasonable fraction of the total amount of lettuce produced in the two cities, should be included in such programs. Although they often have better infrastructure for hygienic preparation of raw-eaten vegetables than dealers in markets or fast food sellers, it also depends on the applied washing method in order to ascertain that the lettuce is thoroughly clean of bacterial load. Since most restaurants and canteens are registered, they should be easier to access and control than street vendors.

Vegetable dealers and street food vendors could be approached through the activities of extension agents, including units from MoFA (Ministry of Food and Agriculture), AMA (Accra Metropolitan Assembly) and other government bodies. MoFA's programs directed to vegetable sellers and market infrastructure have already been launched and are still ongoing. Different existing programs should be coordinated and focus on the health risk of raw-eaten vegetables. MoFA's extension services should also be involved in health implementation activities directed at farmers and street food sellers.

A good entry point for intervention programs could be found in the already existing associations. Various vegetable sellers associations and the so-called Maggi© Fast Foods Association of Ghana would be suitable networks to access the described target groups. Their organisational structures should be strengthened so that they can be used for training purposes

or as platform for information exchange with government bodies. Unfortunately, many vegetable dealers and fast food sellers are not yet members of the existing associations.

A legal framework, consisting of a set of by-laws (Laryea, 2002), to regulate the hygiene standards in markets and food stands is existent, although it might be better adapted to reality. But the law enforcement, which would be the task of AMA health department, is unsatisfactory due to lack of resources for the task force and the ignorant attitude of dealers and sellers. Since many fast food sellers are not registered and do not have permanent stands and are not members of any association, it is particularly difficult to approach them or control their movement. A health campaign broadcasted through radio, TV or newspapers could reach households, fast food consumers and restaurants, and thus increase the pressure on vegetable dealers and fast food sellers to comply with the recommended hygiene standards.