

Fenton, Ioulia

Working Paper

Problematizing the effect of rural-urban linkages on food security and malnutrition in Guatemala's Western Highlands

Development Research Working Paper Series, No. 03/2013

Provided in Cooperation with:

Institute for Advanced Development Studies (INESAD), La Paz

Suggested Citation: Fenton, Ioulia (2013) : Problematizing the effect of rural-urban linkages on food security and malnutrition in Guatemala's Western Highlands, Development Research Working Paper Series, No. 03/2013, Institute for Advanced Development Studies (INESAD), La Paz

This Version is available at:

<https://hdl.handle.net/10419/87819>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Institute for Advanced Development Studies



03/2013

**Problematizing the Effect of Rural-Urban Linkages on
Food Security and Malnutrition in Guatemala's Western Highlands**

by:

Ioulia Fenton

Development Research Working Paper Series

03/2013

June 2013

The views expressed in the Development Research Working Paper Series are those of the authors and do not necessarily reflect those of the Institute for Advanced Development Studies. Copyrights belong to the authors. Papers may be downloaded for personal use only.



Problematizing the Effect of Rural-Urban Linkages on Food Security and Malnutrition in Guatemala's Western Highlands

Ioulia Fenton *

La Paz, June 2013

Abstract:

Strong rural-urban linkages are increasingly seen as key to achieving sustainable livelihoods and food security in developing countries. However, not all linkages are positive and, although this is recognised in literature, few explore their potential unfavourable characteristics. Based on twelve weeks fieldwork in Guatemala this paper aims to contribute in four ways. Firstly, it details the extent of rural-urban linkages in the lives of ordinary Guatemalans, the reasons for their existence and the contribution they make to food security. Secondly, it highlights the existence of rural-urban criminal networks that negatively impact livelihoods and food security. Thirdly, it illustrates how poor quality linkages in government administration and service provision render them ineffective in alleviating food insecurity and malnutrition. Finally, by focusing on the case of Coca-Cola, it illustrates how extensive rural-urban networks of processed food and drink companies bring with them economic benefits, but adversely affect food security and nutrition through a number of mechanisms. The paper concludes that in order to better design policies aimed at improving livelihoods, food security and nutrition, the growth of rural-urban linkages in different spheres of private and public life should be analysed for its negative as well as positive contributions.

Keywords: Rural-urban linkages, food security, malnutrition, livelihood diversification, Guatemala, service provision, land ownership, agriculture.

JEL codes: R23, Y40, Y91, Q15, Q18.

* Institute for Advanced Development Studies (INESAD), e-mail: ifenton@inesad.edu.bo. The paper is based on the author's Development Studies Master thesis at the School of Oriental and African Studies (SOAS), University of London.

1. Introduction

Food security is seen as existing “when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life” (1996 World Food Summit). It can only be achieved if four different dimensions are met simultaneously: availability, access, utilization/consumption and stability. Firstly, there needs to be sufficient local *availability* of a variety of nutritious foods and enough income to *access* it. Correct *utilization/consumption* of food requires the possession of adequate knowledge of what constitutes a healthy diet, and depends on people’s access to health, water and sanitation services, all of which affect biological capacity for utilization. Finally, *stability* of livelihoods ensures continuous capacity to meet the first three dimensions (FAO, 2011; USAID, 1992). The definition of food security has evolved over time and continues to be debated, however, for the purposes of this paper, it is taken as above.

Malnutrition is “the most serious consequence of food insecurity” (Bouis & Hunt, 1999:169). Although under-nutrition affects 925mn people globally (FAO, 2010), 195mn of whom are children (UNICEF, 2009), since 1.5bn adults and 43mn children are now overweight or obese (WHO, 2011), malnutrition is increasingly a problem of over-nutrition as well. The two phenomena are inextricably linked since childhood under-nutrition increases chances of adulthood obesity (Eckhardt, 2006). This “double-burden of malnutrition” (FAO, 2006) affects the poorest (Patel, 2007) and the food insecure (Tanumihardjo et al, 2007; Shariff & Khor, 2005) the most, making the connections between poverty, both sides of malnutrition and food insecurity complex and mutually reinforcing (Marini & Grangnolati, 2003).

Increasingly, the capacity to help households and communities reach food security is seen to depend on our ability to understand rural-urban linkages (linkages henceforth) and their effects (Lerner & Eakin, 2010). The ‘rural-urban linkages approach’ (Okpala, 2003) is based on the changes observed in recent times. Firstly, what constitutes a rural or urban area has been increasingly difficult to define as national population-based definitions fall redundant (Lerner & Eakin, 2010; Chomitz, Buys & Thomas, 2005; DANIDA, 2000; Beal & Kanji, 1999) to the emergence of new complex hybrid spaces (Lerner & Eakin, 2010). Livelihood diversification has been the driving force of this blurring of definition and “a defining feature of late twentieth century capitalism” (Adell,1999:2). It reduces risk and improves opportunities (Zewdu & Malek, 2010; Hussein & Nelson, 1998) in the face of poor access to land and diminishing and increasingly unstable farming incomes that render subsistence-agriculture and agricultural day-labour insufficient food security strategies (Ellis, 1999). Families, therefore, seek a combination of incomes from both rural and urban spaces and sectors (Seraje, 2007; Than, Anh & Tacoli, 2005; Bah et al, 2003). Meanwhile, persisting peri-urban food production (Lerner & Eakin, 2010) and growing urban agriculture have emerged as urbanites’ food security strategies with positive effects on dietary diversity and food security (Zezza & Tasciotti, 2010). Finally, growing rural-urban and international migration over the last few decades (Tacoli & Mabala, 2010) have seen unprecedented growth of remittance flows (Mohapatra, Ratha & Silwal, 2011), that have also been found to positively impact nutrition and food security (Zezza, Carletto, Davis & Winters, 2011).

Proponents of the approach recommend policies to enhance positive linkages in order to meet both urban and rural food security needs. This can be done through: infrastructure and communications development to facilitate *spatial* flows of goods, knowledge, money and people; decentralization of government to improve linkages in service delivery; and combining rural and urban development plans to facilitate forward and backward *sectoral* linkages between agriculture and industries (Meijerink & Roza, 2007; Chowdhury, Negassa & Torero, 2005; Satterwaite & Tacoli, 2003; Tacoli, 2003; Okpala, 2003; Tacoli, 2000).

Although it is recognised that not all linkages are positive and cautions are issued against seeing them as a panacea for development (Sheng 2010; Tacoli, 2003; Satterwaite & Tacoli, 2003; Okpala, 2003), to the author's best knowledge, no studies exist that document in any great detail their unfavourable characteristics. Based on a total of twelve weeks fieldwork in Sololá, a province in the Western Highlands of Guatemala, this paper seeks to contribute by highlighting the need to problematize linkages further to include effects of negative linkages; adverse impacts of inefficient linkages; and unforeseen detrimental consequences of positive linkages on livelihoods and food security. The linkages discussed will include those of families and households, government services and private companies with their effects specifically on food security and nutritional status of individuals and households.

Guatemala is a middle low-income Central American country with a large rural (65%) and indigenous (40-60%) population (UNICEF, 2008). Half its people are classified as poor (World Bank Indicators), with 72% of rural and 76% of indigenous populations living below the poverty line (UNHABITAT, 2011). Despite overall food availability (FAO, 2009), it suffers the world's fourth highest child chronic malnutrition rate of 43.3% (Marini & Gragniloti, 2003) and is currently in the grips of a 'neglected' food security crisis (Hootsen, 2011). It also suffers high adult obesity and overweightness rates (29%, Asfaw, 2011) resulting in substantial and increasing risk of heart disease and diabetes (Gregory, 2008). This makes it a very interesting case from which to investigate the effects of rural-urban linkages on food security and malnutrition.

After a methodology outline, the first part of the paper will focus on factors affecting availability, access and stability dimensions of food security. It will begin by documenting how rural-urban linkages are increasingly at the centre of the lives of Sololátecos (residents of Sololá) and discuss some of the drivers behind this livelihood diversification. It will then illuminate the instability presented by negative linkages of the country's criminal networks. The rest of the paper will be devoted to looking at the consumption dimension of food security. To start, it will document how inefficient linkages in government service provision and political decentralisation are linked to poor nutritional knowledge. Finally, using the example of Coca-Cola, it will demonstrate the mechanisms through which, despite making a positive economic contribution, the deep rural-urban linkages of processed food and soft drink companies can have a negative impact on food security and malnutrition.

2. Methodology

Twelve weeks of fieldwork were carried out between June and September 2011, primarily in a regional market city of Sololá in the Western Highlands of Guatemala. A mixed methodology was applied including direct participant observation and visual surveys of the built and rural environment. Semi-structured interviews focusing on issues of livelihoods, food security and rural-urban linkages in households were piloted, adjusted for cultural appropriateness and administered to 50 mainly indigenous Maya participants. Interviews lasted between 30 and 60 minutes. Participants were randomly approached in the city of Sololá, but purposefully chosen to be balanced on gender and rural/urban residency (Table 1). Thirty were market vendors, ten were market customers and ten were store owners and/or workers. Additional questions on agricultural produce origins and movement were incorporated into the semi-structured interviews for vendors (see Appendix A). This and other relevant information was collected through briefer conversations with an additional 24 vendors and 15 wholesalers.

Table 1: Semi-Structured Interview Respondent Cohort

	Female	Male	Totals
Vendors	16	14	30
Market Customers	5	5	10
Shop Owners or Workers	6	4	10
		Total	50
		<i>Rural Residents</i>	24
		<i>Urban Residents</i>	26

The original semi-structured interviews included 24-hour consumption recalls ascertaining dietary variety and sufficiency (Appendix A). These, however, proved difficult (see Appendix C). Therefore, a consecutive 38-item food frequency questionnaire was designed, piloted and administered to 16 participants (12 women/ 4 men; 8 rural/ 8 urban residents) to be compared with expert recommendations (see Appendices D & E). In the first instance they were asked to state current consumption of different foods. To test nutritional knowledge, they were then asked what they felt the optimum frequency of consumption should be of each food group to maintain good health. In this hypothetical scenario, participants were asked to imagine no financial or food availability barriers. Additional information volunteered by participants was noted. Expert opinion on optimum consumption levels was sought from key informants and national guidelines. It is difficult to make precise comparisons since the portion size was neither specified nor asked for from the participants. However, some general observations can still be made and selected findings are presented where appropriate.

Twelve key informants were chosen by purposive sampling directed towards knowledge and experience of government, multilateral donor and NGO initiatives to tackle

malnutrition, food insecurity, educational and service delivery deficits in Guatemala. These were spread across a range of relevant expertise to gain a comparative view and increase the possibility for triangulating information (for a full list of informant backgrounds see Appendix B). A local indigenous woman was hired as a translator from the two main local Maya languages of Kaqchikel and Quiché to Spanish and proved an invaluable source of cultural and political information.

A focus group with 10 community leaders helped to triangulate findings. Meanwhile, personal observation, pile sorting exercises and consultation of previous anthropological works helped refine research materials (see Appendix F for detail). Original photographs are used throughout.

Care was taken to maintain the highest possible ethical standards throughout and training sessions were undertaken with a hired male translator to ensure understanding of ethical and cultural considerations (Appendix F). Research purpose was explained to all respondents. They were also made aware that their participation was confidential, voluntary and open to withdrawal at any time. All data was coded and confidentially stored.

Limitations

Time and budget constraints meant that the sample is not large and probably unrepresentative, so caution is taken not to overgeneralise the results. Secondly, the semi-structured interviews generated a wealth of data. The analysis, however, includes only the most pertinent information to the effect of rural-urban linkages on livelihoods, food security and malnutrition. Furthermore, due to time and other constraints, all information could not be collected for each participant. Therefore, each topic's results are presented using the available number of responses.

3. Results and Discussions

Existing Rural-Urban Linkages in Livelihoods

The Rural Face of Urban Sololá

Nineteen municipalities surround Lake Atitlán located at the heart of the *department* of Sololá in the Western Highlands of Guatemala. The *municipality* of Sololá is estimated to be home to 113,078 people (National Institute of Statistics, INE), roughly 68,120 of whom are the official population¹ of the *city* of Sololá, the municipal and departmental capital and fieldwork site. This figure would 'feel' incorrect to any visitor and deeper probing indeed discovers that only 13% of official city residents can be classified as living in an 'urban' space (Macario-Calgua, 2008). This distinction is important since analysis of the city's 'urbanity', and subsequent policy recommendations, would vary greatly depending on which statistic is used.

Moreover, walking around the city reveals that even the lives of the city's urban residents are steeped in rural activities, whilst its outer edges are embedded in an agricultural

¹ Own calculations based on census and INE growth projections data.

countryside. It is not uncommon, for example, to see chickens, geese and turkeys in backyards and on rooftops (Figure 1). Meanwhile, the city's built-up Southern edge is buffered from the lakeshore by a couple of hundred meters of small family plots and an occasional grazing cow (Figure 2); and to the North, just as rapidly, urban becomes rural with rows of corn planted on near-vertical, marginal cliffs. This indicates the importance of urban agriculture and livestock production to urban-based Sololátecos. The phenomenon is not limited to Sololá: Zezza & Tasciotti (2010) found that 38% of Guatemala's city-dwellers engage in urban agriculture with generally positive effects on dietary diversity and food security.

Figure 1: Urban Agriculture Activities in Sololá

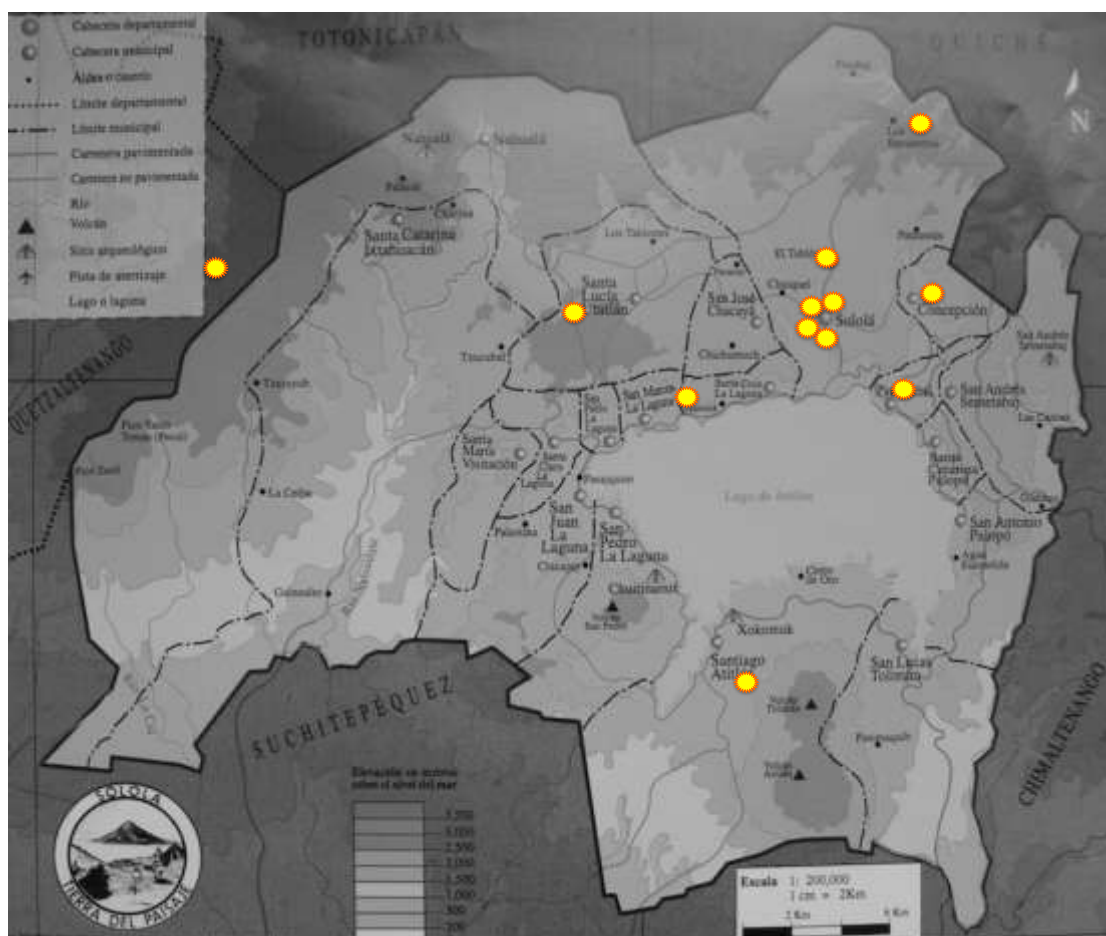


Figure 2: Agricultural Buffer at the Heart of the City



Agriculture outside the city is equally important: 80% of both rural and urban respondents owned family land all around the department (Map 1). None, however, owned enough to meet the 50-80 *cuerdas*² that Stringer and Lambert (1989) estimate to be required for family subsistence (in Wittman & Saldivar-Tanaka, 2003:25) with 86% owning 10 *cuerdas* or less. Respondents complained that the land does not produce enough for the family so they buy much of their produce in the market, and indeed, it has been found that most Guatemalan farm households are net food buyers (de Janvry & Sadoulet, 2010). Unsurprisingly, majority could not draw any income from their land: only 38% of rural and 30% of urban respondents reported selling any of their crops, the rest grew for household consumption only. This is in line with previous findings that most Guatemalan families draw less than half their income from farming, instead diversifying their earnings by seeking a number of non-farm incomes (USAID, 2010).

Map 1: Locations of Family Farms owned by Selected Urban Sololátecos



Sectoral Rural-Urban Diversification

For most Sololátecos, livelihood diversification is a survival strategy, as one informant explained: “Right now I have a thousand occupations and work in many different places; we do what we can to get food”. Depending on educational levels, these occupations

² A *cuerda* is the locally used measurement of land, measuring 32x32 *vara*. Each *vara* is 84.6cm, making total area of 732.89m² (third of an acre). The estimated amount needed for subsistence is 4.5-7ha, which works out to roughly 50-80 *cuerdas*.

include any combination of: agricultural day labour, making and selling traditional clothes and jewellery, logging, construction work, running small refreshment stalls, pedagogy and domestic and cleaning work. Importantly, these have the effect of connecting rural residents to urban spaces and vice versa. Some workers in urban *tiendas* (small stores), *comedores* (cheap eateries), restaurants and bakeries close to Sololá central plaza, for example, commute daily by bus or boat from surrounding rural towns and villages, whilst other rural dwellers engage in street trade or seek out tourism-related work in urban Panajachel, a nearby tourist hotspot. For many, the last two decades have led to another prominent diversification strategy with spatial rural-urban linkages at its heart: intermediary trading.

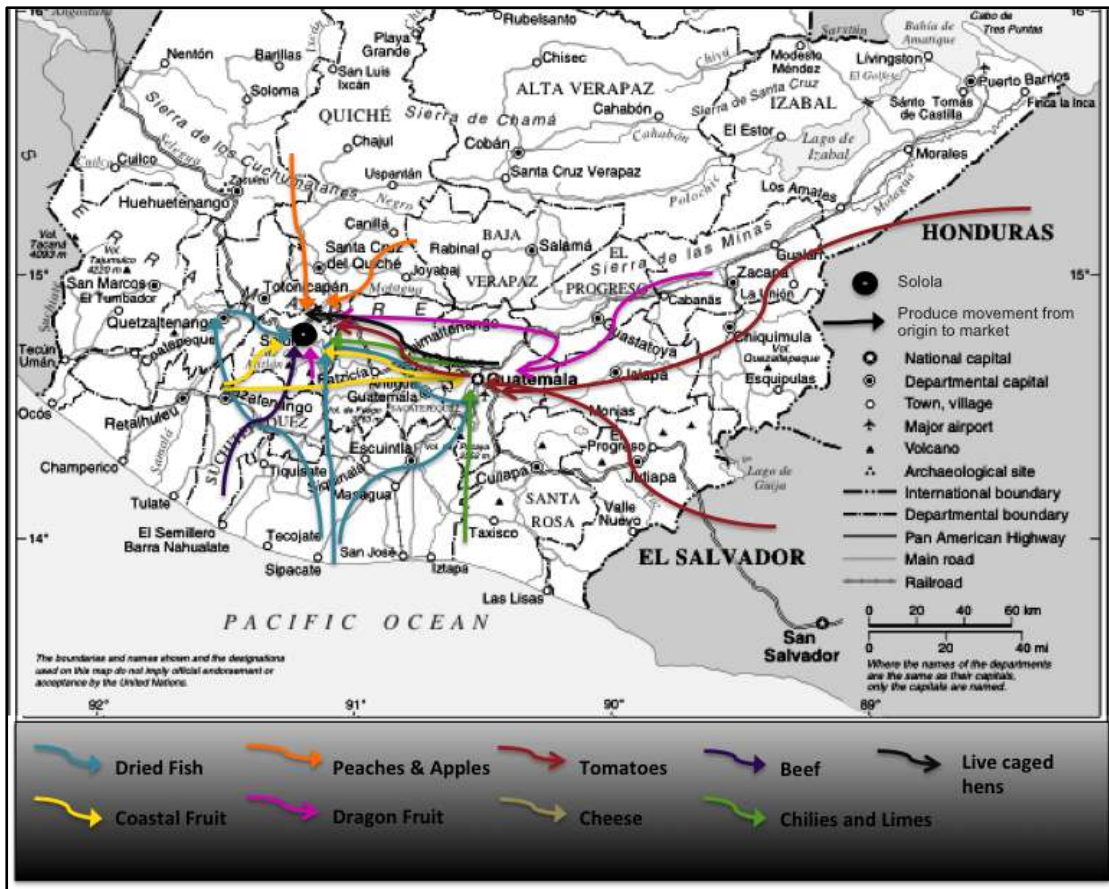
Sololá has virtually no tourism and has always been the location of an important traditional regional market (Horn, 2007; deYoung, 2002). Many sell produce daily, however, the market is a periodic one (Murakami, 1997) and truly comes to life on Tuesdays and Fridays as it sprawls out of the city nerve centre down every adjacent street and alley attracting over 1,000 vendors (Horn, 2007). These merchants sell food, household items, traditional materials and clothing (*tipica*) and everything from batteries to fake watches, and copycat drugs to pirated music and DVDs.

Previous studies of Guatemala's markets found Sololá to be dominated by farmers and direct producers of *tipica* goods (Murakami, 1997; McBryde, 1933). Majority of vendors in the current study, however, reported selling only produce they buy elsewhere (46 out of 49), because even those with land (80%) did not produce enough to feed their own families, let alone sell their harvest. Therefore, at least in the case of food trade, the last twenty years appear to have seen a lot of change and Sololá market is now dominated by intermediaries.

Most vendors/traders are not vehicle owners, with fish traders being the notable exception since they travel long distances to and from the coast. Whilst butchers have direct links to coastal livestock farms that deliver their customers' meat, in the absence of vehicle ownership, most vendors have to rely on other channels to make their purchases. Forty percent of fruit, vegetable and livestock (FVL) traders, for example, buy produce by the *quintal* (100lb) from truck-owning wholesalers³ who sell in the city on Thursdays. Sololá's fruit wholesalers buy from other bulk traders in Guatemala City, who, in turn, acquire the fruit from farmers in hotter coastal areas. Wholesalers of vegetables buy directly from farmers in the department of Sololá, where more temperate conditions allow for production of a large variety of corn, beans and vegetables. As a result of this rise of intermediaries and wholesalers, the value chain has grown considerably and most produce exchanges hands three to five times by the time it reaches the Sololá market consumer (Map 2).

³ Since vehicle ownership and ability to drive is rare among women outside the cities and the requirement to spend much time away from families that is hard to fulfill for mothers, wholesaling is virtually exclusively dominated by men.

Map 2: Wholesaler Movement of Selected Goods into Sololá



The other 60% FVL vendors (half male, half female⁴) prefer to make (sometimes several) weekly trips to the larger, less expensive, more varied and specialised wholesale city markets of Guatemala City, Chichicastenango, Quetzaltenango and Chiché (for selected trader movement see Map 3).

⁴ In the market women outnumber men in the vegetable, live birds and animals, and poultry trade while men dominate the fruit, meat, pirated goods and homeware selling. The gender difference possibly stems from the fact that women can produce vegetables on their own land locally, travel to other nearby markets or purchase it and the live birds, animals and poultry from wholesalers who visit Sololá a few times a week. Trade in fruit and meat requires travel to and direct relationship building with producers in farther off coastal areas. The same is needed to trade pirated goods and homeware, something that women are less likely to do. Wholesale trade of all goods is also dominated by men. It requires driving and since it is incredibly rare to see an indigenous female driver, let alone vehicle owner, this is probably a significant barrier to entry for women. Additionally, wholesale traders travel much longer distances, often spending most of the week away from home, which carries with it dangers that the women themselves or their husbands would be unhappy for the women to face. Women engage in additional economic activities like making and selling traditional clothes.

Map 3: Origins and Weekly Travel of Select Traders



What makes this activity possible is that, despite its rugged terrain and frequent landslide-induced blockades, Guatemala has a widespread and generally reliable informal transport network of pick-up trucks and “chicken buses”, as they are referred to by foreigners and travel books. These take advantage of the country’s 15,700km constantly expanding, fairly dense road network that connects rural and urban areas (INE, 2011).

However, 8,780km of Guatemalan roads are classified by INE as dirt or rural. These tend to be narrow, uneven and especially difficult to pass during daily rainy-season (May-October) flash floods. Poor road quality suggests, as was found to be the case by Eff & Jensen (2007), that it is not road density per se that facilitates Guatemalan vendor movements. Instead, I would maintain, it is more influenced by the affordability of travel: a typical 30 minute journey costs around US\$0.45, a four hour one way trip around \$2.35. Albeit being affordable, travel does carry with it significant risks of falling victim to roadside armed robbery, a frequent Guatemalan event during which passengers are relieved of all their goods and possessions. An alternative, equally affordable, option is to pay wholesalers to transport the goods to Sololá, who, along with their normal bulk trade, deliver up to 200 baskets for such individual customers.

It is unsurprising that Sololá is just one of several markets supplied by each wholesaler. What is unanticipated, however, is that a fifth of the *vendors* were not Sololátecos, but travelled up to four hours to reach Sololá from their home departments of Totonicapán, Chichicastenango, the Coast and others⁵. This phenomenon is not new and is observable across all of Guatemala’s regional markets (Murakami, 1997). The men and women making the long journeys work incredibly long hours with early-morning rises and late-evening returns to their homes. Juana, for instance, has been selling her delicacy of spicy iguana and tomato stew for the last 20 years. She lives in coastal Monte Rico and wakes up at 3a.m. to prepare the dish. She is on the bus by 5a.m., which takes three hours to reach Sololá or Panajachel, where she trades most days to return home as late as 9 p.m.

⁵ This was not limited to food vendors but included sellers of many other goods.

It is certainly true that “the institution of periodic markets evolved to integrate Guatemala’s rural areas with urban areas, and to integrate the country’s different ecological zones” (Eff & Jensen, 2007:7). Increasingly, however, this role is played not by direct producers, but by intermediary traders. Due to time constraints, unfortunately, it was not possible to investigate the effects on benefit distribution along the resultant lengthened value chain between producers, wholesalers, traders and vendors. However, rather than seeing intermediaries as inherently exploitative (Tacoli, 2003) and designing policy to eliminate them (Rengasamy et al 2002), further research is warranted to better understand their role in the development of small and intermediate urban spaces and in connecting market systems (Satterthwaite & Tacoli, 2003). At least in the case of Sololá, they are certainly playing the connecting role. The persistence and hard work of vendors, traders and chicken-bus drivers alike, in the face of poor road infrastructure and risks of robbery, are responsible for continuous availability of fresh, cheap, seasonal produce in Sololá’s market (Figure 4). This leads thousands of customers from different departments to choose Sololá despite long journeys, because most find greater variety and cheaper prices than their local markets (Interviews; Horn, 2007; Tax, 1963).

Figure 4: Selection of Produce Available in the Market



Spatial Rural-Urban Diversification: Migration & Remittances

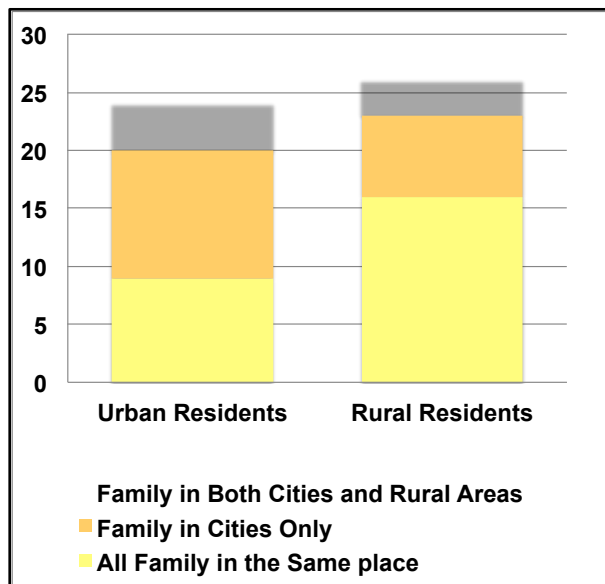
Regular commuting is not the only spatial form of livelihood diversification. Many choose more permanent internal or international moves. This connects families spatially through financial rural-urban flows in the form of remittances (Tacoli, 2003), whilst reverse flows of food and other resources have also been noted (Drimiea, 2009). As a result, governments are increasingly urged to invest resources in understanding and facilitating these transitions through physical, communications and financial transfer systems development (Orozco, 2005). This is especially the case in Guatemala (Cheikhrouhou et al, 2006).

Data on inter-generational family migration patterns from 56 (Rural=29, Urban=27) informants revealed that an overwhelming majority (N=48) live in the same village/town as their parents and grandparents did, while 43% (N=24) said all immediate family still reside in the very same place. Twenty-seven respondents claimed at least one family member who had migrated internally, all with at least one relative now living in a large

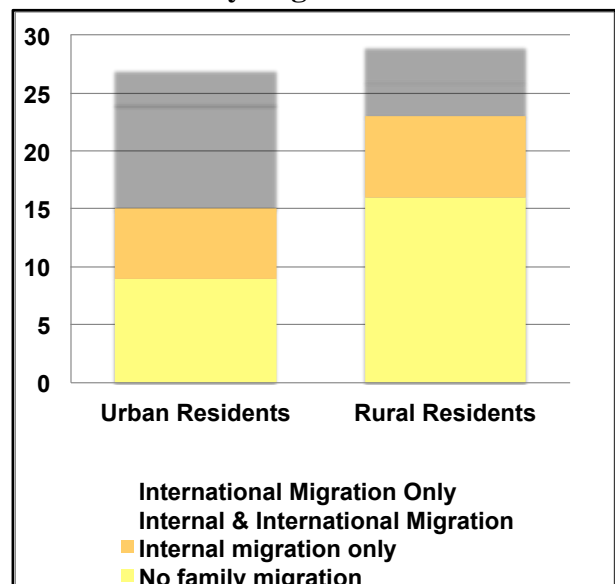
city. Just under a third (N=18) of the sample reported to have a relative living in another country (Graph 2), most in the US (N=16). In addition, all but one⁶ of the reported international migrations took place in 2004 or later (Graph 2) and all but one of those was an illegal journey made over land to North America, perhaps illustrating local effects of 9/11 and 2007/8 financial crises. This suggests that, in line with global trends in urbanisation (UN, 2010) and immigration (WMR, 2010), both internal and international migration are recent decades' phenomena.

Only a handful of older respondents reported receiving any financial help from their children in other places in Guatemala, always complaining at its inadequacy. Meanwhile, sharing of farm produce between rural and urban family members was non-existent, as many explained: “we do not grow enough to share”, “others have their own land”, “no one shares, it’s each to their own”. Therefore, it appears that few of the surveyed Sololátecos accrued financial benefits from family members being based in other cities and, in return, few out-migrants retained links with the families they left behind through food sharing. Lack of family sharing practices is not surprising since, historically, the family unit has never been as important as the traditional spiritual-Maya sense of community and the strong agrarian bonds built through communal land tenure (McBride & McBride, 1942). The fact that very few reported participating in community organisations, groups or harvest exchange with neighbours is testament to the loss of this primary form of social capital. This could have occurred as a result of the systematic destruction of communal land arrangements since the 1880s (Wittman & Saldivar-Tanaka, 2003), Christianisation of Maya (87% of participants were either Evangelical or Catholic Christians), and “fierce individualism promoted by globalising capitalism” in Guatemala as elsewhere (Castillo, 2005:9).

Graph 1: Internal Family Migration

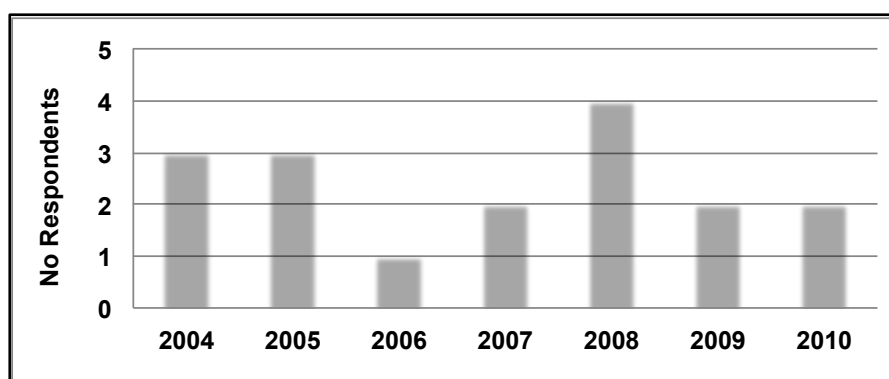


Graph 2: Internal & External Family Migration



⁶ A nun who emigrated to Cuba in the 1970s.

Graph 3: Timings of International Out-Migration



Conversely, around two thirds of international migrants were reported to send remittances to immediate family. Global remittance flows have increased annually by 17% since 2000 and, having dipped following the 2007/8 crisis (Orozco, 2009), reached \$325bn in 2010 (Mohapatra et al, 2011). Similar growth occurred in Guatemala and, at 10% of GDP, remittances represent a significant economic sector (Cheikhrouhou et al, 2006). They have a positive impact on nutrition and food security (Zezza et al, 2011) and, in Guatemala's Western Highlands specifically, they have been linked with lower child malnutrition rates (Carletto, Covarrubias & Malucci 2011). Improvements to sanitation and higher household spending on food (Azzarri & Zezza, 2011; Carletto et al, 2011) and education (found among both internal and international remittance-receiving households in Guatemala, Adams & Cuecuecha, 2010) are the possible mechanism by which this occurs.

Finally, rural Sololátecos were 67% more likely to have no family migrants, internal or external, whilst urban dwellers were 110% more likely to have family not only in other cities, but also overseas (Graph 2). This step-wise element suggests that those Sololátecos whose families build links with urban areas by making the first move to the urban space of Sololá are subsequently more likely to have migrants seek opportunities in other Guatemalan cities and eventually to the U.S. The latter step generates remittance flows that can have positive effects on food security. Small sample size, however, cautions against generalisation and, even if representative, this effect may well be a local one since Sololá suffered less of the earlier political refugee outflows experienced by many rural and border-towns of Guatemala during its Civil War to which we will return in due time.

Drivers of Rural-Urban Livelihood Diversification

There are two sets of reasons for livelihood diversification away from subsistence agriculture in Guatemala. The first is related to land productivity. To start, Guatemala is no stranger to the weather's whims. It suffered significant harvest, infrastructure and life losses during hurricane Mitch in 1998, Stan in 2005, the 2009 El Niño event and hurricane Agatha in 2010. As a result, many lost their produce turning to the market to purchase staples, the prices of which skyrocketed (USAID, 2010). These continue to rise and the price of corn, the main staple, has more than doubled from Q110 per *quintal* in Dec 2010 to Q250 in June 2011 (USAID Price Bulletins)⁷, jeopardising even the last resort strategy of reverting to a solely corn-tortilla-based diet that some respondents alluded to. Secondly,

⁷ Data from USAID price bulletins Dec 2010 and August 2011 using nominal market prices for white maize in Guatemala City.

a big concern of community leaders, expressed during a focus group, was the ‘chemical treadmill’ set in motion as a consequence of the switch towards modern agricultural methods during the Guatemalan Green Revolution. Fertiliser upsets ecological balance by destroying micro-bacteria and natural sources of nutrients, whilst growing pest-resistance renders pesticides ineffective (Soule, Carre & Jackson, 1990). As a result, greater applications of both are required every year to achieve the same production levels. At the same time, events of 9/11 and the 2007/8 crisis conspired to significantly raise the costs of these (mainly imported) agricultural chemical inputs (USAID, 2010), further increasing cost of production. Finally, even as a cash income strategy, agriculture is increasingly unviable since, for twenty years, agricultural wages have remained low despite a generally rising GDP (McAllister, 2009). Few alternative domestic opportunities and recurring global economic shocks push many to seek opportunities in North America where, increasingly, Guatemala’s “economic migrants replace political refugees” (Smith, 2006:1).

The second set of reasons has to do with land availability. The department of Sololá is tied with Totonicapán as the second smallest by area, yet, its population is the fourth fastest growing, having increased by 42% between 2002 and 2011 to 437,145 people. This is mainly due to natural increases and the ‘ruralisation’ of Guatemala, whereby indigenous people are reproducing at twice the *ladino* (white or mixed-descent) rate, essentially compensating for any rural to urban migration (UNDP, 1999:54). There are signs of this slowing, however, since the average number of siblings in the study was 7.24, but an average number of children among those who had finished reproducing was only 4.90 (N=30). Nevertheless, Sololá is incredibly densely populated with 470 people/km² (many times the national average of 128)⁸. This and large family sizes have ensured that already small inheritance has significantly reduced with each generation, putting great pressures on family land resources and food security (Milidragovic, 2008), therefore encouraging livelihood diversification as a survival strategy.

Although it may appear so, this pressure is not primarily a Malthusian problem. In fact, Guatemala’s land scarcity has long been documented to be the product of historically highly uneven distribution and concentration of land ownership. It began with dispossession during the Spanish conquest and was reinforced through several failed land-reforms, the most ‘successful’ of which culminated in a 1954 CIA-backed coup returning redistributed land to the U.S.-owned United Fruit Company, a handful of powerful agro-elites (Wittman & Saldivar-Tanaka, 2003) and given out as rewards to military officers (Gould, Carter & Shresta, 2006). These inequalities were at the centre of a 36-year Civil War that left 200,000 people (mainly rural indigenous) dead or ‘disappeared’ at the hands of the state (Manz, 2008). One of the keys to reaching the signing of the 1996 Peace Accords was a promised land distribution programme. It came in the form of the World Bank/International Monetary Fund-enacted, market-led FRONTIERRAS project, which has not only failed to redress the situation, but, during its operation, has seen a greater concentration of landholdings (Pascual & Velásquez, 2002). By 2001, 96% of subsistence producers cultivated just 20% of the land and 0.2% of powerful elites controlled a staggering 70% (Gould et al, 2006). It is these inequalities that are seen to be the root of the persistent food insecurity and malnutrition facing many Guatemalans (USAID, 2010) that, in turn, drive rural-urban livelihood diversification.

⁸ Own calculations based on INE data.

Negative Linkages: Criminal Networks

Guatemala has a long history of violence from the Spanish conquest and colonisation that destroyed much of Maya life to several military dictatorships ending in the 36-year Civil War (Manz, 2008). The 1996 Peace Accords were designed to bring peace and stability. However, the country is still dominated by organised drug and crime networks led by ex and current prominent military and political figures (BBC, 2011; Brands, 2010: Insight Crime); violent city gangs (Brands, 2010; Fischer, 2010); endemic internal crime and violence (The Economist, April, 2011), especially against women (Musalo, Pellegrin & Roberts, 2008; Sanford, 2008); and a recent tidal wave of armed-robbery on public transport, thefts and kidnap-based extortions (Fischer, 2010). All have been operating in a general environment of impunity as a result of an inefficient state, a corrupt government and police service, and ineffective legal and justice systems (Sieder, 2004).

Although the civil war violence was mainly directed at rural hotbeds of suspected guerrilla activity—65-98% of all murders and disappearances between 1968 and 1996 were in rural areas⁹ (Ball, Kobrak, and Spierer, 1999)—the epicentres of peacetime crime and violence are primarily *perceived* to be in urban centres (McIlwaine and Moser, 2001). In reality, few escape its reach and all but one interviewee (N=19) was affected in some way. Four reported knowing a friend or distant relative that had fallen victim to a serious crime, while the remaining fourteen were impacted directly themselves or through an immediate family member. These included two murders, three kidnap-extortions, four robberies/thefts (two of their shop or house and two on chicken buses), an alcohol-fuelled bar-brawl murder, and a brutal gang rape.

The victims of theft and kidnap-extortions were convinced that these crimes are centrally controlled and organised by urban crime cartels from the cities. These are said to have ‘eyes in every village’. Ordinary people are watched closely and with signs of upward social mobility comes an order to collect a ‘tax’ on the success. Legal and justice impunity and distrust in the police, who are rumoured to be involved in the crimes, means that they are not only unreported for official statistics, but families have no choice but to pay up or risk losing their relatives. As Pedro, a fish trader from Santiago Atitlán who lost two brothers to murder, explained about his and his cousins’ kidnapping: “It was terrible and we were beaten badly. We couldn’t go to the police, we had to sort it out in the family. We took a loan to pay the Q100,000 [\$14,000] release fee. This happens a lot in Guatemala because people are always watching and know our business. People get jealous when others do well”.

Most, including Pedro, do not hold theft or life insurance as the premiums are expensive and few trust the companies to pay should anything go wrong. Thus, being a victim of theft, robbery or extortion at times serves a devastating financial shock to livelihoods and many reported having to take a loan, sell possessions or simply pray to recover. In turn, this instability presents a threat to food security, one that many Guatemalans expect to encounter.

In line with a growing body of developing country literature (Seraje, 2007; Than et al, 2005; Bah et al, 2003), the last two chapters have demonstrated that, in the past few decades, livelihood diversification through rural-urban linkages has been an increasing

⁹ Albeit true comparisons are difficult as many of those killed in ‘urban’ areas were residents of villages.

feature in the lives of Sololátecos. *Sectoral* diversification has led many to pursue a combination of incomes from both rural and urban sectors and for some to become intermediary traders who connect Guatemala's rural and urban spaces. Meanwhile, majority of urban residents hang on to family land and maintain agricultural activities even in their urban homes, a strategy found to positively affect food security (Zezza et al, 2011). Others search for opportunities either in Guatemala's cities or the US, another rural-urban diversification strategy with possible favourable effects on food security through remittance flows (Azzarri & Zezza, 2011; Carletto et al, 2011). As has been found in other countries (Seraje, 2007), these changes are driven by the insecurity arising from high inequality in land access and diminishing agricultural productivity that renders subsistence-agriculture and purely agricultural wage-labour unviable as food security strategies in Guatemala.

Not all linkages are positive, however. Criminal networks have 'eyes in every village' and extort a high price for upward economic mobility. Meanwhile, chicken-bus robbers take advantage of rural-urban linkages used by traders and other travellers. Due to their widespread occurrence, these events threaten the achievement and stability of food security of ordinary Guatemalans. The rest of the paper will address the final dimension of food security by focusing on the effects of rural-urban linkages on consumption and utilisation.

Ineffective Linkages

Inadequate Knowledge of Healthy Dietary Practices

As discussed in previous sections, poverty, poor access to land, lack of family planning, inclement weather, and financial and criminal shocks to livelihoods result in reduced or unstable access to food. Although their importance is not to be negated, these factors are not alone in propagating malnutrition and food insecurity. The fact that "people do not know enough about health and nutrition and do not know how to use their resources" was almost unanimously the primary reason cited by practitioners for their persistence, indicates that inadequate knowledge of diet and nutrition play an important part.

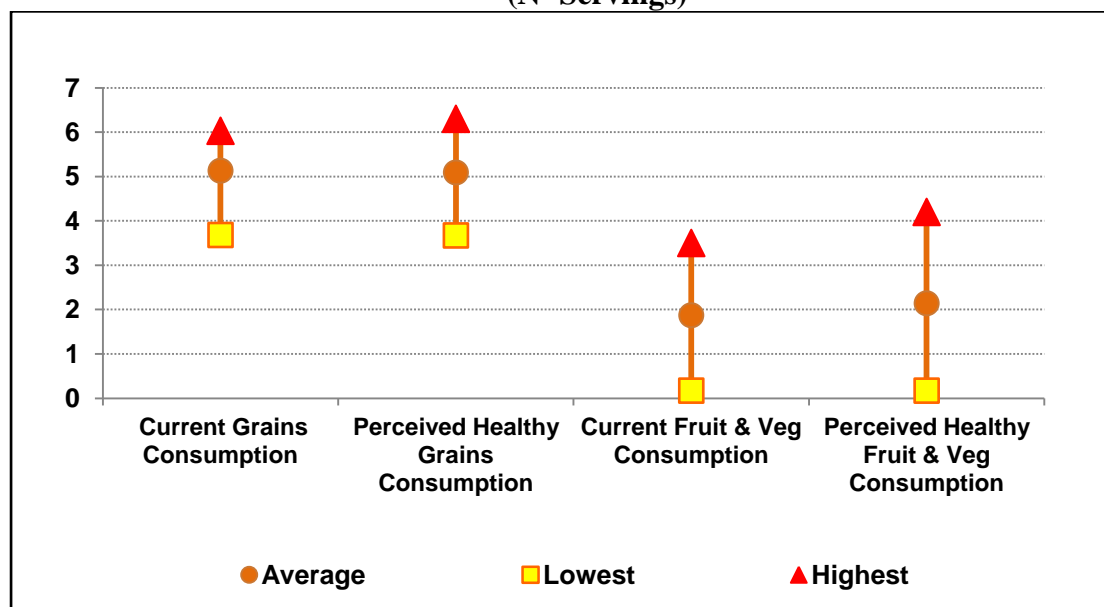
This was largely confirmed through food frequency exercises (Section 2.2.3). Although information was collected for a number of different foods (Appendices D & E), the following discussion will focus on the most striking of features regarding consumption of grains and vegetables.

Low fruit and vegetable intake is amongst the top 10 risk factors to global mortality and simply increasing consumption of them could save up to 2.7mn lives globally (WHO, 2003). Additionally, grains such as corn, wheat, maize, and their derivatives, are an important part of a healthy balanced diet, but, due to their high carbohydrate and caloric content, they should not be consumed in excess. For optimum health the expert informants agreed with the WHO and USDA adult consumption recommendations of at least five 6oz servings of fruit and vegetables and around one serving of grains per adult per day.

On average, respondents currently consume just over five servings of grains every day (highest of six portions): three of tortillas and two of others, including bread, rice and corn/wheat-based drinks (Graph 4). This is well above the recommended single daily portion and is probably a conservative estimate since most *comedore* customers were observed to eat between 6 and 12 tortillas with their lunch, estimated to weigh 40g (1.4 oz)

each (Hambidge et al, 2005). If this is the case with all three daily meals, then the grain servings per day are much higher than the average of five estimated here. Furthermore, in the hypothetical scenario none would change their consumption of grains by any significant amount. This is not surprising given the cultural importance of corn to the Maya people, who are said to have been created from it by the Gods, whilst a girl’s passage into womanhood depends on her ability to make the perfect tortilla (UNICEF, 2008).

Graph 4: Current Consumption of Grains and Fruit & Vegetables (N° Servings)



When it came to fruit and vegetables, although most saw them as ‘healthy’, ‘nutritious’ or ‘full of vitamins’, at 1.9 servings (lowest of 0.2 servings, Graph 4), current daily consumption was well below the recommended 5 portions. Furthermore, in the hypothetical scenario this figure changed only slightly to 2.1, with only one respondent raising consumption above 4 portions. This indicates that even when money is not an issue and health is the primary objective, most do not possess adequate knowledge to reach that goal.

One of the biggest causal factors of this, and persistent food insecurity and widespread malnutrition, in Guatemala is lack of education (WFP, 2011). In the sample (N=33, 17 rural and 16 urban), 42% had never attended school, 18% had finished primary school (N=6) and only 21% completed secondary school (N=7). Not a single person had been educated at tertiary level, with an average of 4.2 completed grades (4.9 for men, 3.5 for women). Finally, average urban grade completion was markedly higher than rural (6.1 and 2.4 respectively). This is important since education’s positive effects are well documented. Child stunting in Guatemalan families where parents are educated beyond primary school, for example, is only 20%, compared to 60% in families where parents completed only primary school. Moreover, mother’s and father’s ability to speak Spanish further reduces stunting occurrence by 6.5 and 17 percentage points, respectively (Marini & Gagnolati, 2003). An opposing effect comes from the fact that good early childhood nutrition has proven significant positive impacts on later educational attainment, raising adult school completion by an average of 1.2 grades in rural Guatemalan children (Hoddinott et al, 2009), and reduces the risk of adulthood obesity (Kain, Vio & Albala, 2003). The links

between education and both sides of the double-edge of malnutrition are, therefore, strong, reciprocating and cumulative.

Rural-Urban Linkages in Government and Service Provision

Education falls into the realm of government, another actor whose ability to build strong rural-urban linkages impacts citizen's lives and capacity to meet food security (Meijerink & Roza, 2007; Satterthwaite & Tacoli, 2003; Chowdhury, Negassa & Torero, 2005; Tacoli, 2003; Okpala, 2003). As Sheng notes, "using rural-urban linkages ... means strengthening the links through a more balanced distribution of political power between urban and rural areas and an improved capacity to seize economic opportunities in a globalizing economy" (2010:25). This means decentralisation of service provision too (Tacoli, 2003), where local government departments are empowered to take control and be more responsive to local needs, making service delivery more effective and efficient (Satterthwaite & Tacoli, 2003).

Guatemala has seen successive political and service delivery decentralisation efforts. They began with the 1985 Constitution that decentralised health and education services and established local rural and urban development councils (COCODEs) charged with bridging the gap between urban administrative centres run by elected local mayors and rural communities (ICMA, 2004). The neoliberal push of the 1996 Peace Accords promoted participation through further decentralisation (Alcaraz & Lopez, 2004). Finally, Guatemala's commitment to the Millennium Development Goals (MDGs) saw national and international efforts focus on increasing coverage in health and education through strengthening central-local and, by implication, urban-rural linkages.

True decentralisation is one that redistributes not only administrative capacity, but also resources and power (Wittman & Geisler, 2005). By and large, this has not occurred in Guatemala. Unlike all other levels of government, none of the COCODE representatives, for example, draw a state salary, yet they are obligated through community selection to a two-year full-time commitment. Their successful negotiation of the project proposal bureaucracy, rare due to their own low education levels, only gains them the materials the community needs since money remains controlled by municipal urban-based mayors. This hindrance is not unique to the local councils. Government officials in the Ministry of Agriculture (MAGA) and the Secretariat of Food and Nutritional Security (SESAN) expressed great frustration at inefficiencies created by their having to submit project designs to the capital's budget minister. In a food security project requiring seeds and a computer for community nutritional education proposed by MAGA, for example, the minister sent inappropriate seeds and a second-hand computer which could have been purchased cheaper locally.

These inefficiencies are quite costly in a country that seriously lacks the ability to raise domestic revenue, leaving funding for community projects sparse. At 10% of GDP, Guatemala collects some of the lowest taxes in Latin America (World Bank Indicators) and tax reform has thus far been successfully blocked by powerful interests (Sanchez, 2009). This ensures higher corporate profits, whilst the poor are disproportionately burdened since majority of the tax base comes from value-added taxes on sales (Krznicaric, 2004). Meanwhile, only a tiny 3.6% of what is collected is spent on health and education (USAID, 2010) and, according to government officials, endemic corruption, public fund embezzling and elite capture of projects further dilutes the funds, which were already halved as a result of the 2007/8 global financial crisis.

Despite low budgets, and thanks partly to international efforts, Guatemala still claims a 94% primary school enrolment rate, appearing close to meeting the second MDG of universal primary school coverage by 2015. However, the strong rural-urban links in physical primary school infrastructure are somewhat negated by a number of other factors that include poor teacher training, fees that are out of reach of many, a poorly designed urban-biased curriculum, and few opportunities in the labour market.

Urban Bias Failings of the Education System

Guatemala's school curriculum is full of urban and *ladino* biases, as one informant explained: "Like in many developing countries, the curriculum is designed within an urban setting for urban job markets...with no relation to the natural world or traditional knowledge, and the information is transmitted in a very Western form". Firstly, starting from pre-school, it is ran in Spanish, which is not the language spoken by many indigenous Maya who make up up to 60% of the population and speak 24 different Maya languages (UNICEF, 2008). Secondly, although Guatemala has strong primary school coverage and 60% of its school age population is 'rural', only 24% of secondary schools are in rural areas (UNICEF, 2008). Finally, the five most commonly offered secondary education tracks in Guatemala are business administration, secretarial, accounting, teaching and computation. These are mostly geared towards urban jobs that are not available to most, especially not the 72% of population living in rural areas (UNHABITAT, 2011). When people see no further opportunity, it contributes to some respondents' views of education as a 'waste of time'.

Poorly designed urban and Spanish-language curriculum, combined with the cognitive difficulty of learning associated with malnutrition (Amcof, 1981) and late entry, leads to high grade repetition and, eventually, high dropout rates (Hallman et al, 2006). According to Save the Children (2005), only 52% of Guatemala's children actually finish primary school, with urban completion double the rural rate. The situation is much worse for rural girls who, on average, complete just 1.2 years and 95% of whom never finish primary school (UNICEF, 2008).

Interestingly, *access* to schooling is not found to be a significant factor behind Guatemala's high dropout rates (Hallman et al, 2006). Full *coverage* at all education levels, which is the primary concern of the MDGs, government and donor programmes, therefore, would still fail to improve the situation without strong rural-urban linkages in programme *design* in the form of culturally and linguistically appropriate curriculums to suit both rural and urban job markets.

Failings in Sites of Intervention

Finally, despite evidence of the large positive effect that education could have on malnutrition, most of the national and international response is focused on curative efforts of food aid, maternal nutrition, nutritional supplementation and conditional-cash transfer (CCT) programmes (Marini & Gragnolati, 2003). Directors of such government projects in Sololá expressed grave frustration at the fact that they not only lack effectiveness, but are financially unsustainable and paternalistic, with the negative effect of creating programme dependency.

On the preventative end, the recent government health programme, CAP, and the nutritional education programme run by the Health Centre have focused on strengthening rural-urban links in health and nutritional service provision by ensuring the presence of nutrition and health workers in most small towns and villages. Major failings plague the effectiveness of these solutions as well. Despite the presence of fairly easily reachable clinics and hospitals providing free diagnostic services there are currently no provisions for free medication¹⁰. Resulting frustration and loss of confidence in the medical system mean that the city health centre no longer receives many rural residents, who seek alternative traditional medicines instead. Similarly, since they place little trust or value in government services, people are reluctant to spend valuable working time even on the free education programmes that the community health workers are trying to implement.

Effectiveness is further impaired by the fact that some nutritional education providers have no background on the subject and next to no training for the role. Such poor human capital is endemic to Guatemala's government (ICMA, 2004) and is compounded by a corrupt system of political appointments in which new appointees are rarely sufficiently or appropriately qualified for their posts (informant interviews and ICMA, 2004). This high staff turnover also means that little continuity exists in projects and even a recently started modest government CCT programme was not likely to survive past the September 2011 elections since its founder, and one of only a handful of supporters in a sea of widespread opposition from a powerful business lobby (The Economist, April 2011), Sandra Torres, is out of the presidential running, having been blocked by the high court for ineligibility (The Guardian, 30th June, 2011).

To summarise, although Guatemala has been undergoing decentralisation efforts to strengthen rural-urban linkages in service delivery for a quarter of a century, it has inspired a system of 'deconcentration' as opposed to decentralisation since little real diffusion in terms of resources or power has actually taken place (Wittman & Geisler, 2005). Consequently, weak economic decentralisation has negated the rural-urban linkage advantages of existing administrative decentralisation, whilst weak linkages in education curriculum and nutritional programme *design* negate strong linkages achieved through greater physical coverage. The resulting poor literacy and educational attainment rates have negative effects on food security and malnutrition since people lack adequate knowledge required to lead a healthy life. The resulting lack of faith in government service provision leads many to turn away from even the smallest nutritional education efforts enacted by health workers, further compounding the problem. In essence, this chapter has demonstrated how inefficient, poor quality government service delivery linkages have had a significant negative impact on Guatemalans' food security,

Low school completion and low coverage of government nutritional education programmes leave few other possible sources of nutritional education. Studies have shown that non school-enrolled Guatemalans, especially female Maya, are incredibly isolated in their homes and socialise only in participating in religious groups (Hallman et al, 2009; Hallman et al, 2006). Furthermore, during the current research, most demonstrated little social capital, with sparse involvement in communities or any other groups, socialising only through their weekly church congregations. Currently, these are not sources of

¹⁰ As a health centre worker explained to me, there used to be a little provided, which was not enough but was something, but now there is nothing. In her view this is because the government and mayor are redirecting funds towards their political campaigns.

nutritional education. Thus, knowledge is obtained in two other ways. Firstly, by traditional knowledge channels within the home. However, intergenerational loss of traditional knowledge is well documented in the Guatemalan Maya (Cristancho & Vining, 2009; Bermudez et al, 2008), as well as indigenous communities the world over (FAO, 2009; Kuhnlein, 2003; Kuhnlein & Receveur, 1996). The resulting dietary information is probably insufficient and, if little new formal education takes place, it perpetuates inadequacy of nutritional knowledge through generations. A different type of re-education does occur, however, through advertising and marketing by food and drink companies. With interests lying in profits rather than health and nutrition, these activities, to which we turn to next, present a different set of challenges to Guatemala's food security.

Negative Effects of Economically Positive Linkages

Commodification and Globalisation of Food and Diets in Guatemala?

In the Guatemalan context, trade policy has significantly impacted diet and nutrition (Carbera-Schneider, 2009). Widespread liberalisation by neoliberal elites following the 1996 Peace Accords (Chase-Dunn, 2010), and Guatemala's subsequent participation in a number of free trade agreements, have made Guatemala Latin America's biggest food importing country (Thow & Hawkes, 2009). This has facilitated a rapid expansion of supermarkets (Asfaw, 2007), fast food outlets and the processed food and drinks (PF&D) industry, dominated by foreign companies (Thow & Hawkes, 2009).

The growth of PF&D companies contributes to foreign direct investment (FDI), GDP, taxes and employment creation, and is therefore seen as a positive economic development. However, the resultant greater variety of available animal-based and processed foods has conversely led to a substantial reduction in dietary diversity, especially in the consumption of nutrient-dense food, and a permanent loss of some traditional foods from indigenous peoples' diets (FAO, 2009; Bermudez et al, 2008). This is part of the rapid *nutrition transition* in the country (Thow & Hawkes, 2009; Marini & Gragnolati, 2003), which is the increasing westernisation of diets away from plant-based intake to greater consumption of meat, animal produce and calorie-dense, but nutrient-poor, PF&Ds (Popkin, 2000).

This has been accompanied by the parallel 'westernisation of ill health' - an epidemiological shift away from acute malnutrition, infectious disease and famine towards chronic degenerative afflictions of obesity, heart disease, diabetes and food related cancers (Lang & Heasman, 2004). Links between them and PF&Ds are well established. High soft drink consumption, for example, has proven biomedical links with obesity, type 2 diabetes, hypertension, high blood pressure, dental caries and reduced calcium intake, among others (Vartanian, Schwartz & Brownell, 2007).

Greater consumption of PF&Ds, therefore, contributes to Guatemala's double-burden of malnutrition where the department of Sololá is amongst the worst affected: 76% of its households are food insecure (Hogares, 2010); 64% of children are chronically malnourished (USAID, 2010) and 60% stunted (Lopez, 2004); meanwhile, 28.6% of its men and 46.6% of women are obese, with 70% of the department's adults exhibiting symptoms of diabetes (Monterroso et al, 2002). As I will argue next, these diseases' increasing penetration of rural populations (Prentice, 2005), despite traditionally being associated with urbanisation (Garrett, 2000), partly results from the strong rural-urban linkages built by PF&D companies.

Coca-Cola's Rural-Urban Linkages

The presence of PF&Ds in Guatemala's supermarkets, shops and *tiendas* is overwhelming; large selections of snacks, cookies, crisps, sodas and other *churritos* (junk food) are widely available. The diets of the Sololá Maya have not, however, completely collapsed under the 'globalisation steamroller' (Adell, 1999). Even the better off *ladinos* and urban residents in the study, for instance, still maintain three key daily dietary components of tortillas, eggs and beans. In this regard, I agree with Adell (1999), who speaks specifically from the rural-urban linkage perspective to say that, instead, the globalisation-induced transitions that occur result from a more complex negotiation between the global and the local. With average *daily* consumption reaching almost 170ml per capita in 2004 (Coca-Cola Company, 2004)¹¹, Coca-Cola is one of the most successful global-local and, as shall be demonstrated, urban-rural negotiators in Guatemala, and, as such, will be the focus of the rest of the discussion.

Coca-Cola has a widespread distribution network connecting its urban bottling facilities in Guatemala City to the country's rural populous. There are three central distribution warehouses in Sololá. Two are in the city: one services the urban stores and restaurants (Figure 3), while the other focuses on the department's rural population. The third is located in Los Encuentros reaching towns and villages further North on the provincial border.

The distribution channels set up by Coca-Cola are incredibly effective and the company's products can be found in virtually all supermarkets, *tiendas*, restaurants and *comedores*, as well as informal refreshment stalls dotting the market and the town's streets. This is not a phenomenon limited to Sololá, which has well over 300 *tiendas* (Murakami, 1997), since the same is observable in all nearing towns and villages. Born out of their "think globally and act locally" philosophy (McBride, 2005: 82) the company has established incredibly strong, extensive linkages that have helped it achieve its corporate goal of being at "an arm's length from desire" (Pendegrast, 2000 in Nagata et al, 2011).

Widespread desire for its products is nurtured through extensive advertising and marketing. Arriving into Sololá city, the first noticeable objects, for example, are the large *Coca-Cola*, *Pepsi*, *Super-Cola*, *Pepsi*, *Coca-Cola* logos reading from left to right on five branded snack vans that permanently line the road between the plaza and the bus queues. These are provided free of charge to the owners in return for product sales. Painting entire buildings with company colours is another prominent advertising strategy the informants call 'coke propaganda', albeit the only benefit to the building owners is a free coat of paint (Figure 5). In the soft drinks company wars in Sololá, Coca-Cola dominates with armies of buildings commanding passers-by to 'Open Happiness' (its current slogan). Although Pepsi's 'Share with Friends' slogan is more rare in the city, many *tiendas*, bakeries, bus shelters and business signs dotted along the road out to the highway bear the company's circular logo and red, blue and white colours. With no laws in place against advertising aimed at children, even school *tiendas* bear soft drink branding with school directors receiving 'commissions', whilst it is not uncommon for teachers to sell sodas and junk snacks to their students. Finally, in Santiago Atitlán, 'the names of the current mayor and

¹¹ Based on own conversions from ounce data. Later figures for Guatemala were not available in the company's annual reports.

his administration adorn the side of City Hall in red and white letters, next to paintings of Coke bottles' (Nagata et al, 2011: 308).

Figure 5: Coca-Cola Branding & Distribution Activities in Sololá



The priming effects of advertising that lead to higher levels of consumption are well-established (Chandon & Wansink, 2011; Harris, Bargh & Brownells, 2009). The branding and marketing techniques described above serve a powerful strategy in Guatemala, where ownership of a television set and cotemporary magazine readership, the usual advertising and promotional sales channels, are not widespread outside the cities.

The result of this coca-colonisation (Letherman & Goodman, 2005) is the hybridisation of culture (Nagata et al, 2011; Robles-Zavala & Fiechter-Russo, 2008), with Coca-Cola, the international icon of U.S. culture (Leatherman & Goodman, 2005: 833), permeating modern and ancient Maya practices and transforming Coca-Cola into 'Latin America's second religion' (Lydersen, 2002). It is encouraged, for example, to offer a gift of a Coke when meeting officials. The first thing that children sellers ask for if you decline nuying their trinkets is 'One Cola for me?' And, it is not unusual for traders to negotiate prices using soft-drinks to state their case: 'No, 100 quetzales is too little. Pay 10 quetzales more: it is just one Coke for me'. At the same time, Coca-Cola has found its way into recipes, religious rituals and offerings, and even health practices of Sololátecós, with the boiling of coke with sugar and spices serving as a local cough medicine preparation (Nagata et al, 2011).

Effects on Food Security – Affecting Choices

The psychological associations and cultural hybridisation built with Coca-Cola, partly deliberately through its advertising slogans and campaigns, are very strong and can override health concerns. Despite articulating that sodas are ‘bad for you’ or ‘damage the organism’, in the hypothetical scenario of the FFEs, for example, every one of the three indigenous male participants said they would either maintain (N=2) or increase their soda consumption to *daily* (N=1). “I like it, If I have money and good health, I would drink it every day”; “I would want to enjoy myself and do what I like” were the justifications despite our attempts at re-explaining that the exercise is aimed at achieving optimum health¹².

The fact that perceived happiness through consumption of Coca-Cola and other products, rather than health, was the men’s priority made the comparison with expert opinion somewhat redundant. It was, however, revealing in a very different way. Although more research would be needed to confirm this on a larger scale, in the case of the three indigenous men, should they be upwardly socioeconomically mobile, their diets are likely to take a turn for the worse. Most men and women insist that cooking is ‘women’s work’. However, I focus on men because, despite the kitchen being almost entirely a woman’s domain, anthropological research suggests that rather than women being the ‘gatekeepers’ of food (McIntosh & Zey, 1998), it is often the men who control what is eaten in the home (Charles and Kerr, 1988), since most women shop and cook to *serve* their husbands’ tastes (Ellis, 1983). This would indicate that, along with the men’s own diets, if their families’ wealth increased, the diets of their wives and children would likely also suffer. Since two of the men were from small rural hamlets, testament to the reach of the rural-urban Coke networks, this effect may be similar for both rural and urban residents, which adds explanatory value to Garrett & Ruel’s finding that the double burden of malnutrition is not statistically related to urbanisation, but *is* correlated with economic development (2005).

Wealth is another strong Coca-Cola association. During nutritional lessons on the negative aspects of junk food, Mexican children responded “with observations that the people on TV drinking coke are rich and successful, and coke cannot be all bad’ (Goodman & Leatherman, 2005: 844). These associations are hard to break and lead Sololátecos to choose Coke despite calling it ‘too sugary’, ‘chemical’, ‘unnatural’ and ‘bad for the organism’. Observing customers of the market’s eateries, it becomes clear that the drinks by far most often chosen to accompany the usual breakfast and lunch combination of tortillas, rice or *chow mein*, potato and mayonnaise salad, and fried chicken or *caldo* (meat and vegetable stew), are products of Coca-Cola or Pepsi companies. In Santiago Atitlán, part of the reason is that Coke, with its returnable glass bottle, can be cheaper than water. Indeed the word *agua* (water) is sometimes synonymously used with Coke (Nagata et al, 2011). This is not the case in Sololá, especially not in the market where at Q7 the soda is more than double the Q3 price of either water or a large serving of home-made *fresco* (usually papaya or tamarind juice mixed with water and sugar)¹³. At the end of a busy market day, parts of the city’s sidewalks are impassable as shop owners stack up crates of

¹² This was not limited to carbonated beverages or to men since most participants would choose greater consumption of one or more PF&Ds or generally unhealthy foods like fried chicken, chow mein and French fries, despite awareness of the risks involved.

¹³ It is of note that all drinking water in Guatemala has to be purchased or at least filtered since tap water is badly contaminated. The problem of water insecurity, albeit serious, is not likely to be solved soon since the biggest bottle water company *Pura Vida* is owned by the politically and economically powerful Castillo family, owners of Gallo lager.

empty soda bottles from the day's trade (Figure 6), a further indication of the popularity of the beverages, the preference for which, rising out of positive associations, trumps both economic and health concerns.

This represents an uphill struggle for health and nutrition education workers. Through widespread distribution networks and marketing strategies, the iconic, globally recognisable Coca-Cola logo and hour-glass shaped bottle can reach the minds and mouths of both urban and rural Guatemalans equally, across cultural and language divides. Public health and NGO nutrition programmes, however, struggle to achieve the same depth. This is especially the case in rural areas (that suffer the highest chronic child malnutrition rates, Marini & Gragnolati, 2003, and the highest levels of co-existence of stunting and obesity in the same household, Lee et al, 2010) for three reasons.

Figure 6: Empty Soda Bottle Stacks at the End of a Busy Day's Trade



Firstly, lack of sufficient funds prevents them from physically reaching people the same way that corporations can. As the Director of the United Nation's Food and Agriculture Organisation's (FAO's) Sololá programme explained: "The bombardment by advertising is endless. There is no way that government health and nutrition education budgets can compete". Secondly, despite the fact that Sololá's population is 90% indigenous Maya and mainly rural (Simmons, 2004), and 33% of Guatemala's rural men and 69% of women are illiterate speaking little to no Spanish (UNICEF, 2008), most programmes, are run by Ladinos and in Spanish. This adds a cultural and language barrier to effective knowledge transmission that was seen earlier within the education system (Section 6.3). At the same time, programmes are mainly aimed at women (Blake, 2010; Milidragovic, 2008), which could lead to further ineffectiveness, since, as was also seen earlier, men often have greater control over household nutrition. All this is overcome by Coca-Cola through its strong brand recognition. Finally, public programmes lack continuity (Section 6.4), their messages can be complex requiring extensive explanation and the national education

curriculum does not yet have a health and nutrition component to educate children from a young age. Conversely, starting in their early years and with an almost daily persistence, people are naturalised to the red and white colours, the hourglass-shaped bottle, and the simple message of ‘Open Happiness’ of what I would like to call ‘the Coke education’. This is further compounded in Guatemala by the high socioeconomic (Nagata et al, 2011) and biophysical status attached to larger female figures, meaning that messages of the ills of obesity have fallen on deaf ears in a country with the highest levels of female obesity and overweightness in Latin America (16 and 32 percent, respectively, Marini & Gragnolati, 2003). ‘A bigger woman is stronger and healthier in the body and mind’, said one male informant. There are, however, signs of this changing for the younger generations of Guatemalans, for whom even their female shape preferences are coca-colonised. The ‘Coca-Cola Shape’ of thin waist and large breasts is increasingly named the ideal body type in contrast to the undesirable ‘2-Liter Coke bottle’ shape of a fuller, less curvy figure (Nagata, 2011:311).

In summary, this chapter has demonstrated how growth of companies like Coca-Cola has occurred through their ability to build strong rural-urban linkages. Whilst making a positive economic contribution (Thow & Hawkes, 2009), this successful rural-urban negotiation has negative consequences for health and food security by encouraging greater consumption of products that are linked to rising obesity and westernisation of ill-health in developing countries (Vartanian et al, 2007). The effectiveness of their methods has deeply penetrated the diets and cultural fabric of Guatemalans and other Latin Americans, which undermines efforts of health and nutrition workers already suffering from the weaknesses of inefficient rural-urban linkages in government administration and service provision.

4. Conclusions

The evidence presented here suggests a need to further problematise rural-urban linkages away from focusing solely on positive effects on livelihoods and food security in three ways. Firstly, by documenting effects of negative rural-urban linkages, as was demonstrated by Guatemala’s criminal networks. Secondly, by investigating factors that render seemingly strong rural-urban linkages in government decentralisation and service provision ineffective, such as poor economic decentralisation and poorly designed education curriculums, respectively. Finally, and most importantly, to consider the negative effects of economically positive linkages such as growth of food and drinks companies that build some of the strongest rural-urban linkages in developing countries. These contribute to GDP, FDI and taxes, but have negative effects on other public priorities such as health, nutrition and food security by increasing consumption of products known to be linked to both under- and over-nutrition and increased chronic disease burden. Deeper understanding of the complexity of linkage effects and local conditions that affect them would allow policy makers to better focus on the positive contributions they have to offer, whilst minimising the externalities.

Bibliography

Adams R. H. Jr. & Cuecuecha A. (2010)"The Economic Impact of International Remittances on Poverty and Household Consumption and Investment in Indonesia," WB Policy Research Working Paper Series 5433, available online at: <http://www->

wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2010/09/27/000158349_20100927093138/Rendered/PDF/WPS5433.pdf

- Adell, G. (1999) “Theories and Models of the Peri-Urban Interface: A Changing Conceptual Landscape”, Discussion Paper for *DFID Strategic Environmental Planning and Management for the Peri-Urban Interface* Research Project; available online at <http://discovery.ucl.ac.uk/43/>
- Alcaraz J. P. & López L. P. L. (2004) “A General View Of The Institutional State Of Decentralization In Guatemala” in Tulchin J. S. & Selee A. (eds.) “*Decentralization and Democratic Governance in Central America*”, Wahington D. C.: Woodrow Wilson International Center for Scholars.
- Amcof S. (1981) “*The Impact of malnutrition on the learning situation*” UNESCO/OXFORD University Press, Paris.
- Andrews J. (2004) “Para Ayudar: Perspectives on Homegardens in San Andrés Sematabaj”, North Carolina State University Anthropology Student Field Research Papers, available online at: <http://faculty.chass.ncsu.edu/wallace/Guate%20SummerPapers%202004.htm>
- Asfaw A. (2007) “Supermarket Purchases and the Dietary Patterns of Households in Guatemala”, IFPRI Discussion Paper 696, available online at: <http://www.ifpri.org/sites/default/files/publications/ifpridp00696.pdf>
- Azzarri C. & Zezza A. (2011) “International migration and nutritional outcomes in Tajikistan”, *Food Policy*, Vol. 36, pp. 54–70
- Bah M., Cissé S., Diyamett B., Diallo G., Lerise F., Okali D., Okpara N., Olawoye J. & Tacoli C. (2003) “*Changing Rural–Urban Linkages in Mali, Nigeria and Tanzania*”, *Environment and Urbanization*, Vol. 15, No. 1, pp. 13-24.
- Ball P., Kobrak P. & Spierer H. F. (1999) “State Violence in Guatemala, 1960-1996: A Quantitative Reflection”, American Association for the Advancement of Science, available online at <http://shr.aas.org/guatemala/ciidh/qr/english/index.html>
- Beal, J. & Kanji, N. (1999) “Households, Livelihoods and Urban Poverty”, Background Paper for the ESCOR Commissioned Research on *Urban Development: Urban Governance, Partnership and Poverty*; available online at http://www.ucl.ac.uk/dpu-projects/drivers_urb_change/urb_society/pdf_liveli_vulnera/DFID_ESCOR_Beall_Households_Livelihoods.pdf
- Bermudez O. I., Hernandez L., Mazariegos M. & Solomons N. W. (2008) “Secular Trends in Food Patterns of Guatemalan Consumers: New Foods for Old”, *Food and Nutrition Bulletin*, Vol. 29, No. 4, pp. 278-287
- Bouis H. & Hunt J. (1999) “Linking Food and Nutrition Security: Past Lessons and Future Opportunities”, *Asian Development Review*, Vol. 17, No’s. 1 & 2, pp. 168-213.

- Brands H. (2010) "Crime, Violence, and the Crisis in Guatemala: A Case Study in the Erosion of the State", Strategic Studies Institute Research Publication, available online at: www.strategicstudiesinstitute.army.mil/pdf/PUB986.pdf
- Carbera-Schneider J. N. (2009) "Journal of Enterprising Communities: People and Places in the Global Economy", *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 3, No. 1, pp. 84-9
- Carletto C., Covarrubias K. & Malucci J. A. (2011) "Migration and child growth in rural Guatemala", *Food Policy*, Vol. 36, No. 1, pp. 16-27.
- Castillo R. A. H. (2005) "Between Complementarity and Inequality: Indigenous Cosmivision as an Element of Resistance in the Struggle of Indigenous Women", Paper Presented at Conference on *Indigenous Struggles in the Americas and Around the World: Land, Autonomy, and Recognition*, Organized by The University Consortium on the Global South (UCGS) and Centre for Research on Latin America and the Caribbean (CERLAC), February 10-11, 2005, available online at: http://www.ucgs.yorku.ca/Indigenous%20Conference/Aida_Hernandez.pdf
- Chandon P. & Wansink B. (2011) "Is Food Marketing Making us Fat? A Multi-disciplinary Review", INSEAD Working paper 2011/6, available online at: <http://www.insead.edu/facultyresearch/research/doc.cfm?did=48061>
- Charles, N. and M. Kerr. (1988). *Women, Food and Families*. Manchester: Manchester University Press.
- Cheikhrouhou H., Jarque R., Raúl H-C. & El-Swaify R. (2006) "The U.S.-Guatemala Remittance Corridor: Understanding Better the Drivers of Remittances Intermediation", WB Working Paper No. 86, available online at: <http://siteresources.worldbank.org/INTAML/Resources/US-Guatamala.pdf>
- Chomitz K. M., Buys P. & and Thomas T. S. (2005) "Quantifying the Rural-Urban Gradient in Latin America and the Caribbean", World Bank Policy Research Working Paper 3634, June 2005, available online at: <http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2005/06/14/00001640620050614122820/Rendered/PDF/wps3634.pdf>
- Chowdhury S., Negassa A. & Torero M., (2005) "Market Institutions: Enhancing the Value of Rural-Urban Links", IFPRI *Food Consumption and Nutrition* Division Discussion Paper No. 195, available online at: <http://www.ifpri.cgiar.org/sites/default/files/publications/fcnbr195.pdf>
- Coca-Cola Company (2004) Annual Report Summary: http://www.thecoca-colacompany.com/investors/annualandotherreports/2004/pdf/koar_04_summary.pdf
- Cristancho S. & Vining J. (2009) " Perceived Intergenerational Differences in the

- Transmission of Traditional Ecological Knowledge (TEK) in Two Indigenous Groups from Colombia and Guatemala”, *Culture & Psychology*, Vol. 15, No. 2, pp. 229-254
- DANIDA (2000) “Why Rural-Urban Linkages Matter”, DANIDA Workshop Papers: *Improving the Urban Environment and Reducing Poverty*; December 5, 2000; Copenhagen, Denmark: available online at <http://web.mit.edu/urbanupgrading/urbanenvironment/issues/rural-urban-linkages.html>
- de Janvry A. & Sadoulet E. (2010) “The Global Food Crisis and Guatemala: What Crisis and for Whom?”, *World Development*, Vol. 38, No. 9, pp. 1328-1339
- de Pee S., Brinkman H-J., Webb P., Godfrey S., Darnton-Hill I., Alderman H., Semba R. D., Piwoz E. & Bloem M. W. (2010) 'How to Ensure Nutrition Security in the Global Economic Crisis to Protect and Enhance Development of Young Children and Our Common Future', *The Journal of Nutrition*, Vol. 140, pp.138S-142S.
- De Young C. (2002) “Sustained Authenticity: How Sololá has Maintained its Character”, NC State University and Universidad del Valle de Guatemala Ethnographic Field Schools, Student Reports, available online at: <http://faculty.chass.ncsu.edu/wallace/GuateSummerPapers.htm>
- DFID (1999) “Sustainable Livelihood Framework Guidance Sheets”, available online at: <http://www.eldis.org/vfile/upload/1/document/0901/section1.pdf>
- Drimiea S. (2009) “Migration, AIDS, and Urban Food Security in Southern and Eastern Africa, Case Studies in Namibia, South Africa, and Ethiopia”, *HIV, Livelihoods, Food and Nutrition Security: Findings From Renewal Research (2007-2008)*, IFPRI Research Brief No 9, available online at: <http://programs.ifpri.org/renewal/findingsbriefs.asp>
- The Economist (2011) “The Tormented Isthmus: Big-time drug trafficking has arrived in Central America”, Apr 14th 2011, Guatemala City, <http://www.economist.com/node/18558254>
- Eckhardt C. L. (2006) “Micronutrient Malnutrition, Obesity, and Chronic Disease in Countries Undergoing the Nutrition Transition: Potential Links and Program/Policy Implications”, IFPRI Discussion Paper 213, available online at <http://www.ifpri.org/publication/micronutrient-malnutrition-obesity-and-chronic-disease-countries-undergoing-nutrition-tr>
- Eff E. A. & Jensen, C. D. (2007). "The Integration of Periodic Markets in Mayan Guatemala: A Gravity Approach", *Working Papers 200705, Middle Tennessee State University*, Department of Economics and Finance, available online at: <http://frank.mtsu.edu/~berc/working/Mayanmarkets.pdf>
- Ellis F. (1999) “Rural Livelihood Diversity in Developing Countries: Evidence and Policy Implications”, ODI Research Paper No. 40, available online at: <http://www.odi.org.uk/resources/download/2112.pdf>

- Ellis R. (1983). 'The Way to a Man's Heart: food in the violent home', in A. Murcott (ed.) *The Sociology of Food and Eating: essays on the sociological significance of food*. Aldershot: Gower Publishing, pp. 164-171.
- FAO (2011) "An Introduction to the Basic Concepts of Food Security", Food Security Program Training Materials, available online at: www.fao.org/docrep/013/a1936e/a1936e00.pdf
- FAO (2010) "The State of Food Insecurity in the World 2010: Addressing Food Insecurity in Protracted Crises". Report jointly prepared by Food and Agriculture Organization of the United Nations & UN World Food Programme. Rome: FAO, available online at: <http://www.fao.org/publications/sofi/en/>
- FAO (2009) "The State of Food Insecurity in the World 2009: Economic Crises - Impacts and Lessons Learnt", Report jointly prepared by Food and Agriculture Organization of the United Nations & UN World Food Programme. Rome: FAO, available online at: <http://www.fao.org/publications/sofi/en/>
- FAO (2006) "The Double Burden of Malnutrition: Case Studies from Six Developing Countries", Food and Nutrition Paper No. 84, Rome: FAO, available online at: <http://www.fao.org/docrep/009/a0442e/a0442e00.htm>
- Fischer E. F. (2010) "Guatemala and the Face of the New Sustainable Narco-State", Guatemala Times, Monday 01 November 2010: <http://www.guatemala-times.com/opinion/columns/1791-guatemala-and-the-face-of-the-new-sustainable-narco-state.html>
- Garrett, J. L. (2000) "An Overview", IFPRI *Achieving Urban Food and Nutrition Security in the Developing World 2020 Vision Focus 3* Brief series, No. 1, http://www.ucl.ac.uk/dpu-projects/drivers_urb_change/urb_society/pdf_liveli_vulnera/ifpri_garett_food_security.pdf
- Garrett J. L. & Ruel M. T. (2005) "Stunted Child-Overweight Mother Pairs: Prevalence and Association with Economic Development and Urbanization", *Food and Nutrition Bulletin*, Vol. 26. No. 2, pp. 209-221.
- Gregory C. O. (2008) "Cardio-Metabolic Risk and the Nutrition Transition in Guatemala", *Public Health and Community Medicine Papers*, available online at: <http://www.mendeley.com/research/cardiometabolic-risk-nutrition-transition-guatemala/>
- Gould K. A., Carter D. R. & Shrestha R. K. (2006) "Extra-Legal Land Market Dynamics on a Guatemalan Agricultural Frontier: Implications for Neoliberal Land Policies. *Land Use Policy Journal*, Vol. 23, No. 4, pp. 408-420.
- The Guardian (2011) "Guatemala Court Blocks Sandra Torres Bid for Presidency",

Thursday 30 June 2011: <http://www.guardian.co.uk/world/2011/jun/30/sandra-torres-court-blocks-presidency>

Hallman K., Peracca S., Catino M. & Ruiz J. (2006) "Multiple Disadvantages of Mayan Females: The Effects of Gender, Ethnicity, Poverty, and Residence on Education in Guatemala", Population Council Policy Research Division Working Paper no. 211, available online at: <http://www.popcouncil.org/pdfs/wp/211.pdf>

Hambidge K. M., Krebs N. F., Westcott J. L., Sian L., Miller L. V., Peterson K. L. & Raboy V. (2005) "Absorption of Calcium from Tortilla Meals Prepared from Low-phytate Maize", *American Journal of Clinical Nutrition*, Vol. 82, No. 1, pp. 84-87

Harris J. L., Bargh J. A. & Brownell K. D. (2009) "Priming Effects of Television Food Advertising on Eating Behavior", *Health Psychology*, Vol. 28, No. 4, pp. 404-413

Hoddinott J., Behrman J., Martorell R. & Quisumbing A. R. (2007) "The Impact of Improving Nutrition During Early Childhood on Education Among Guatemalan Adults", *The Economic Journal*, Vol. 119, No. 537, pp. 734-763. Available online at http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=327761

Hogares E. N. (2010) "Encuesta Nacional de Seguridad Alimentaria en Hogares", Universidad de San Carlos de Guatemala (USAC) publicacion, available online at: http://biblioteca.usac.edu.gt/tesis/05/05_8683.pdf

Hootsen J-A. (2011) "In Guatemala, Food Insecurity a Neglected Threat", World Politics Review Briefing, 13th July 2011, available online at: <http://www.worldpoliticsreview.com/articles/9460/in-guatemala-food-insecurity-a-neglected-threat>

Horn M. (2007) "Market Behaviour: the Market of Sololá, Guatemala", Anthropology Masters Thesis, University of Alberta, available online at: http://ualberta.academia.edu/MeghanHorn/Papers/208182/Market_Behaviour_the_Market_of_Solola_Guatemala,

Hussein K. & Nelson J. (1998) "Sustainable Livelihoods and Livelihood Diversification", IDS Working Paper No. 69, available online at: <http://www.ids.ac.uk/files/Wp69.pdf>

ICMA (2004) "Guatemala Country Report Trends in Decentralization, Municipal Strengthening, and Citizen Participation in Central America 1995-2003", Prepared for USAID, available online at: <http://icma.org/Documents/Document/Document/8745>

Kain J., Vio F. & Albaia C. (2003) "Obesity Trends and Determinant Factors in Latin America", *Cadernos de Saúde Pública*, Vol. 19, Sup. 1, pp. S77-S86.

Krznicar R. (2005) "The Limits on Pro-Poor Agricultural Trade in Guatemala: Land, Labour and Political Power," *Human Development Occasional Papers* (1992-2007) HDOCPA-2005-17, Human Development Report Office (HDRO), United Nations Development Programme (UNDP).

- Kuhnlein H. V. (2003) "Micronutrient Nutrition and Traditional Food Systems of Indigenous Peoples", *Food, Nutrition and Agriculture*, No. 32, pp. 33-39.
- Kuhnlein, H. V. & Receveur O. (1996) "Dietary Change and Traditional Food Systems of Indigenous Peoples. *Annual Revue of Nutrition*, Vol. 16, pp. 417-42.
- Lang T. & Heasman M. (2004) "*Food Wars. The Global Battle for Mouths, Minds and Markets*". London: Earthscan
- Lee J., Houser R. F., Must A., Palma de Fulladolsa P. & and Bermudez O. (2010) "Disentangling nutritional factors and household characteristics related to child stunting and maternal overweight in Guatemala", *Economics and Human Biology*, Vol. 8, No. 2, pp. 188-196.
- Lerner A. M. & Eakin H. (2010) "An obsolete dichotomy? Rethinking the rural–urban interface in terms of food security and production in the global south", *The Geographical Journal*, 2010, pp. 1-10.
- Lopez C. A. C (2004) "Anomalías del Tubo Neural en Guatemala", Universidad de San Carlos de Guatemala Publicación, available online at: http://biblioteca.usac.edu.gt/tesis/07/07_1440.pdf
- Lydersen K. (2002) "Coca-Cola: Latin America's Second Religion", *Alternet*, 28th May: http://www.alternet.org/story/13226/coca-cola%3A_latin_america's_second_religion/?page=3
- Macario Calgua M. (2008) "Costos y Rentabilidad de Unidades Industriales (Producción de Refrescos)", *Facultad de Ciencias Económicas*, Universidad de San Carlos de Guatemala, Working Paper Sololá Volumen 6: Available online at http://biblioteca.usac.edu.gt/EPS/03/03_0696_v6.pdf
- Manz B. (2008) "The Continuum of Violence in Post-war Guatemala", *Social Analysis*, Vol. 52, No. 2, pp. 151-16.
- Marini A. & Gagnolati M. (2003) "Malnutrition and Poverty in Guatemala", World Bank Policy Research Working Paper 2967, January 2003, available online at: http://siteresources.worldbank.org/EXTLACREGTOPNUT/Resources/Guatemala_nurtition_WPS2967.pdf
- McAllister C. (2009) "Seeing like an indigenous community: the World Bank's Agriculture for Development Report read from the perspective of postwar rural Guatemala", *The Journal of Peasant Studies*, Vol. 36, No. 3, pp. 645-651.
- McBride, A. (2005) "Have Your Coke and Eat it too: What Cooking with Coca-Cola Says About Cultural Imperialism", *Gastronomica*, Vol. 5, No. 1, pp. 80–87.
- McBride G. M. & McBride M. A. (1942) "Highland Guatemala and Its Maya Communities." *Geographical Review*, Vol. 32, No. 2, pp. 252-268.
- McBryde, F. W. (1933) "*Sololá: a Guatemalan Town and Cakchiquel Market-Center*". New Orleans: Tulane University of Louisiana Press.

- McIlwaine C. & Moser C. (2003) “Poverty, Violence and Livelihood Security in Urban Colombia and Guatemala”, *Progress in Development Studies*, Vol., pp. 113-130.
- Meijerink G. & Roza P. (2007) “The Role of Agriculture in Economic Development”, *Markets, Chains and Sustainable Development Strategy and Policy Series*, No. 5. Stichting DLO: Wageningen. Available online at: <http://www.boci.wur.nl/UK/Publications/>
- Mendez M. A., Monteiro C. A. & Popkin B. M. (2005) “Overweight Exceeds Underweight Among Women in Most Developing Countries”, *American Journal of Clinical Nutrition*, Vol. 81, No. 3, pp. 714–721.
- Milidragovic D. (2008) “May Our Past Not Be Their Future: Local Perspectives on Factors Contributing to Changing Family Size in San Jorge La Laguna”, North Carolina Student Anthropology Research Papers, available online at: <http://faculty.chass.ncsu.edu/wallace/Guate%20Summerpapers%202008.htm>
- Mohapatra S., Ratha D. & Silwal, A. (2011) “Outlook for Remittance Flows 2011-13: Remittance flows recover to pre-crisis levels”, World Bank *Migration and Development Briefs*, No. 16, available online at: <http://siteresources.worldbank.org/EXTDECPROSPECTS/Resources/476882-1157133580628/MigrationandDevelopmentBrief16.pdf>
- Monterroso G, Prado, P., Humberto J., García W. & Alexander J. (2002) “Prevalencia de Diabetes Mellitus en la Población Indígena del Departamento de Sololá”, *Revista Medicina Interna*, Vol. 13, No. 1, pp. 9-13.
- Murakami T. (1997). “Los mercados y pueblos mayas en el altiplano de Guatemala”, *Informe de las Investigaciones Etnológicas en el Centro y Sur de Guatemala 1991-1994*. Tokyo: Museo de Tabaco y Sal.
- Musalo K., Pellegrin E. & Roberts S. S. (2010) “Crimes Without Punishment: Violence Against Women in Guatemala”, *Hastings Women’s Law Journal*, Vol. 21, No. 2, pp. 161-221.
- Nagata J. M., Barg F. K., Valeggia C. R. & Bream K. D. W. (2011) “Coca-Colonization and Hybridization of Diets among the Tz’utujil Maya”, *Ecology of Food and Nutrition*, Vol. 50, No. 4, pp. 297-318
- Okpala D. C. I. (2003) “Promoting the Positive Rural-Urban Linkages Approach to Sustainable Development and Employment Creation: The Role of UN-HABITAT”, Paper presented at the International Federation of Surveyors (FIG) 2nd Regional Conference on *Urban-Rural Interrelationship for Sustainable Development*, December 2-5, 2003, Marrakech, Morocco; available online at: http://www.fig.net/pub/morocco/proceedings/PS1/PS1_1_okpala.pdf
- Orozco M. (2005) “International Financial Flows and Worker Remittances: Best Practices”, UNDP Report 51, available online at: http://www.ilo.org/dyn/migpractice/docs/51/Orozco_UNPD.pdf

- Patel, R. (2007) “*Stuffed and Starved: Markets, Powers and the Hidden Battle for the World Food System*”, Great Britain: Portobello Books.
- Pascual D. & Velásquez H. (2002) “FONTIERRAS: Structural Adjustment and access to land in Guatemala. An analysis and future perspectives”, IDRC Paper, http://web.idrc.ca/uploads/user-S/10522310920FONTIERRAS_Executive_Summary.pdf
- Pimbert M. P., Thompson J., Vorley W. T., Fox T., Kanji N. & Tacoli C. (2001) “Global Restructuring, Agri-Food Systems and Livelihoods”, IIED *Sustainable Agriculture and Rural Livelihoods* Programme Gatekeeper Series, No. 100, available online at: <http://pubs.iied.org/pdfs/9166IIED.pdf>
- Pinstrup-Andersen P. (2009) “Food Security: Definition and Measurement”, *Food Security*, Vol. 1, p.p. 5-7.
- Popkin B. M. (2000) “Urbanization and the Nutrition Transition”, IFPRI *Achieving Urban Food and Nutrition Security in the Developing World 2020 Vision Focus 3* Brief Series, No. 7, available online at: <http://www.ifpri.org/sites/default/files/publications/focus03.pdf>
- Prentice A. M. (2006) “The Emerging Epidemic of Obesity in Developing Countries”, *International Journal of Epidemiology*, Vol. 35, pp. 93-99.
- Rengasamy S., Devavaram J., Marirajan T., Ramavel N., Rajadurai K., Karunanidhi M. and Rajendra Prasad N. (2002). "Farmers' Markets in Tamil Nadu: increasing options for rural producers, improving access for urban consumers", IIED Series on *Rural-Urban Interactions and Livelihood*, Working Paper No.8, April 2002, available online at: <http://eau.sagepub.com/content/15/1/25.full.pdf>
- Robles-Zavala E. & Fiechter-Russo T. (2008) “Qualitative study of perceptions on poverty and present status of assets in a mayan community in the Yucatan Peninsula, *Universidad y Ciencia*, Vol. 24, No. 3, pp. 191-204.
- Rodríguez M. M., Méndez H., Torún B., Schroeder D & Stein A. D. (2002). “Validation of a semi-quantitative food-frequency questionnaire for use among adults in Guatemala”, *Public Health Nutrition*, Vol. 5, No. 5, pp. 691–698.
- Saldivar Tanaka, L. & Wittman H. (2003) “The Agrarian Question in Guatemala”, Land Research Action Network *Country Background Paper Guatemala*, available online at: <http://www.landaction.org/display.php?article=54>
- Sanchez O. (2009) “Tax Reform Paralysis in Post-Conflict Guatemala”, *New Political Economy*, Vol. 14, No. 1, pp. 101-131.
- Sanford V. (2008) “From Genocide to Femicide: Impunity and Human Rights in Twenty-First Century Guatemala”, *Journal of Human Rights*, Vol. 7, pp. 104–122.
- Satterthwaite D. & Tacoli C. (2003) “The Urban Part of Rural Development: The Role of

- Small and Intermediate Urban Centres in Rural and Regional Development and Poverty Reduction”, IIED Working Paper Series on *Rural-Urban Interactions and Livelihood Strategies*, No. 9, available online at: <http://www.khanya-aicdd.org/publications/Satherwaite%20paper.pdf>
- Save the Children (2005) “State of the World’s Mothers: The Power and Promise of Girl’s Education”, available online at: http://www.ungei.org/resources/files/SafeTheChildren_SOWM_2005.pdf
- Seraje M. (2007) “Livelihood Strategies and Their Implications for Rural-Urban Linkages: The Case of Wolenkomi Town and the Surrounding Rural Kebeles”, NTNU Working papers on *Population and Land Use Change in Central Ethiopia*, No 10; available online at http://www.svt.ntnu.no/geo/Doklager/Acta/serie_a_18_mohammed.pdf
- Shariff Z. M. & Khor G. L. (2005) “Obesity and household food insecurity: evidence from a sample of rural households in Malaysia”, *European Journal of Clinical Nutrition*, Vol. 59, pp. 1049–1058.
- Sheng Y. K. (2010) “Poverty Alleviation through Rural-Urban Linkages: Policy Implications”, UNESCAP *Rural-Urban Linkages* Project Working Paper, available online at <http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/Rural-Urban%20Linkages/Rural-Urban%20Linkages-policyimp.pdf>
- Sieder R. (2004) “Legal Globalization and Human Rights: Constructing the ‘Rule of Law’ in Post-Conflict Guatemala”, USAL Postdoctoral Publications, available online at: http://campus.usal.es/~dpublico/areacp/Doctorado0304/Seminario_Investigacion03/Sieder04.PDF
- Simmons E. (2004) “Micro-Credit NGOs in Sololá Guatemala”, North Carolina State University Anthropology Student Research Papers, available online at: <http://faculty.chass.ncsu.edu/wallace/Guate%20SummerPapers%202004.htm>
- Smith J. (2006) “Guatemala: Economic Migrants Replace Political Refugees”, Migration Information Source, Infopress Centroamericana, April, available online at: <http://www.migrationinformation.org/Profiles/print.cfm?ID=392>
- Soule J., Danielle C. & Wes J. (1990) “Ecological Impact of Modern Agriculture”, *Ecological Agriculture Projects*, available online at: http://eap.mcgill.ca/DIAE_1.htm
- Tacoli C. & Mabala R. (2010) “Exploring mobility and migration in the context of rural-urban linkages: why gender and generation matter”, *Environment and Urbanization*, Vol. 22, No. 2, pp. 389-395
- Tacoli C. (2003) “The links between urban and rural development”, *Environment and Urbanization*, Vol. 15, No. 3, pp. 3-12.
- Tacoli C. (2000) “Rural-Urban Interdependence”, IFPRI *Achieving Urban Food and Nutrition Security in the Developing World 2020 Vision Focus 3* Brief Series, No.

- 3, available online at:
<http://www.ifpri.org/sites/default/files/publications/focus03.pdf>
- Tanumihardjo S. A., Anderson C., Kaufer-Horwitz M., Bode L., Emenaker N. J., Hagg A. M., Satia J. A., Silver H. J. & Stadler D. D. (2007) "Poverty, obesity, and malnutrition: an international perspective recognizing the paradox", *Journal of the American Dietetic Association*, Vol. 107, No. 11, pp. 1966-72.
- Tax S. (1963) "*Penny Capitalism*", Chicago: University of Chicago Press.
- Thanh H. X., Anh D. N. & Tacoli C (2005) "Livelihood diversification and rural-urban linkages in Vietnam's Red River Delta", IIED Working Paper Series on *Rural-Urban Interactions and Livelihood Strategies*, No. 11, available online at <http://pubs.iied.org/pdfs/9518IIED.pdf>
- Thow A. M. & Hawkes X. (2009) "The Implications of Trade Liberalization for Diet and Health: A Case Study from Central America", *Globalization and Health*, Vol. 5, No. 5.
- Vartanian L. R., Schwartz M. B. & Brownell K. D. (2007) "Effects of Soft Drink Consumption on Nutrition and Health: A Systematic Review and Meta-analysis", *American Journal of Public Health*, Vol. 97, No. 4, pp. 667-75.
- UN (2010) "World Urbanization Prospects: The 2009 Revision: Highlights", available online at: http://esa.un.org/unpd/wup/Documents/WUP2009_Highlights_Final.pdf
- UNDP (1999) "*Guatemala: el Rostro Rural del Desarrollo Humano*", Guatemala City: UNDP.
- UNHABITAT (2011) "Global Report on Human Settlements 2011: Cities and Climate Change", available online at: <http://www.unhabitat.org/categories.asp?catid=555>.
- UNICEF (2009) "Tracking Progress of Child and Maternal Nutrition: A Survival and Development Priority", New York: UNICEF, available online at: http://www.unicef.org/publications/files/Tracking_Progress_on_Child_and_Maternal_Nutrition_EN_110309.pdf
- UNICEF (2008) "Status of Indigenous Girls in Guatemala", Joint Publication of the United Nations Children's Fund (UNICEF) and the Office for the Defense of Indigenous Women (DEMI). available online at: http://www.unicef.org.gt/1_recursos_unicefgua/publicaciones/look_at_me_part1.pdf
- USAID (2011) Guatemala Monthly Price Bulletin August 2011: http://www.fews.net/docs/Publications/Guatemala_2011_08%20EN.pdf
- USAID (2010) Guatemala Monthly Price Bulletin December 2010: http://www.fews.net/docs/Publications/Guatemala_2010_12_price%20bulletin_eng.pdf

- USAID (2010) “Guatemala Food Security Framework Analysis”, paper prepared by James T. Riordan for Chemonics International, available online at: http://pdf.usaid.gov/pdf_docs/PNADU457.pdf
- USAID (1992) “Definition of Food Security”, USAID Policy Determination PD-19, available online at <http://www.usaid.gov/policy/ads/200/pd19.pdf>
- WHO (2011) “Obesity and Overweight”, Fact Sheet N°311, available online at: <http://www.who.int/mediacentre/factsheets/fs311/en/index.html>
- WHO (2005) “Preventing chronic disease: a vital investment World Health Organization”, Geneva: WHO.
- WHO (2003) “Fruit and Vegetable Promotion Initiative”, A Meeting Report No. 25, available online at: http://www.who.int/hpr/NPH/fruit_and_vegetables/fruit_and_vegetable_report.pdf
- Wittman H. & Geiser C. (2005) “Negotiating Locality: Decentralization and Communal Forest Management in the Guatemalan Highlands”, *Human Organization*, Vol. 64, No. 1, pp. 62-74
- WMR (2010) “World Migration Report 2010: The Future of Migration, Building Capacities for Change”, New York: International Organization for Migration (IOM), available online at: http://publications.iom.int/bookstore/free/WMR_2010_ENGLISH.pdf
- Zewdu G. A. & Malek M. (2010) “Implications of Land Policies for Rural-urban Linkages and Rural Transformation in Ethiopia”, IFPRI *Ethiopia Ethiopia Strategy Support Program II Working Papers Series*, No. 15, available online at: http://essp.ifpri.info/files/2011/02/ESSP2_DP15_Implications-of-Land-Policies-for-Rural-urban-Linkages-and-Rural-Transformation-in-Ethiopia.pdf
- Zeza A., Carletto C., Davis B. & Winters P. (2011), “Assessing the Impact of Migration on Food and Nutrition Security”, *Food Policy*, Vol. 36, pp. 1–6
- Zeza A. & Tasciotti L. (2010) "Urban Agriculture, Poverty, and Food Security: Empirical Evidence from a Sample of Developing Countries", *Food Policy*, vol. 35, No. 4, pp. 265-273.

APPENDICES

APPENDIX A

SEMI-STRUCTURED INTERVIEW QUESTION GUIDE

INCOME, HUMAN CAPITAL, etc.

- Name
- Male/ Female
- Age?
- Age of partner?
- What age got married?
- What do they do? How earn money?
- What does the partner do?
- How many years of education did they complete?
- Them_____ Partner_____
- How many siblings? _____boys, _____girls
- How many children? _____boys, _____girls
- What do they do?
- How many years education did they complete?
- Do the children help on the land? Y/N - detail
- Children spend time with relatives?
- Do they vote? Y/N
- Have bicycles? Y/N
- Do they have a car? Y/N
- Do you have a TV? Y/N
- Their total income?
- Religion? Catholic, Evangelical, Other
- Do you hold any Maya traditions?

LAND

- Do you own land? Y/N
- Where is it?
- How big is it?
- How did you get the land?
- Was it inherited or bought?
- If yes, by whom the husband or wife?
- Has your family always had the land?
- Was it ever smaller or bigger?
- If bought or is now bigger or smaller, when did this happen?
- What do you grow and how much?
- Do you use artificial fertiliser or pesticides?
- Do you have an artificial irrigation system or rely on rain?
- How much of it does your family eat?
- Do you sell any? Where?
- Do you grow anything for export?
- Do you share your produce with others?
- Do others share their produce with you?
- If live in the town, do you have an urban garden at all?
- If yes, what do you grow on it?
- If no own land, do you rent any land or help out on someone else's farm?

FARM ANIMALS

- Which farm animals do you have and how many?
- Do you get eggs and milk from them?
- Do you eat it all or sell/share it too?
- How often would you slaughter one of their animals?
- Where do you buy the rest of the food you eat?

COMMUNITY, SOCIAL/PHYSICAL CAPITAL

- Do you live in Solola town or caserio or another place?
- *If not the town, but caserio then...*
 - How far is that from Solola town?
 - How many people roughly live in the community?
 - Do you like living in your community? Y/N
 - Community-shared resources?
 - Do you get involved in running or organising your community? Y/N - examples?
- Do you agree with how the community is run? Y/N
- Do you like your alcalde (mayor?) Y/N
- Does the community have a school? Y/N
- Pre-school Y/N, Primary Y/N, Secondary Y/N
- Running water and electricity? Y/N
- Where do you get your drinking water? Tap, Well, Buy,
- Do you filter the water? Y/N
- Have you always lived there?
- If no, where did you live before and when and why did you move?
- Are your parents and grandparents also from there? Y/N
- If not, where are they from, when and why moved?
- Where do parents live?
- Where do siblings live? (detail)
- Do siblings also have land?
- If yes, do they share produce with you?
- Other family living in other villages, towns or cities? Y/N
- If yes, where and who:
- If yes, do you share resources with them such as farm produce, money?
- Have any family living abroad in other countries? Y/N
- If so, where and who, please detail
- If yes, do you share resources with them such as farm produce, money?
- Receive or send money, how much roughly and what do you do with it?

COOKING

- Do you eat most meat at home? Y/ N

- Who cooks in the home?
- If you, what is your favourite dish to cook?
- Do children help?
- Do men, women and children all eat together or do some eat first and others later?

EATING OUT

- Do you ever eat out in comedores or restaurants? Y/N
- What type?
- What is your favourite restaurant?
- How often do you eat out in restaurants or comedores in a week?

EATING HABITS

- What type of food do you like to eat? Name examples?
- What is your favourite dish?
- 24 Hour Recall: What did they have for breakfast, lunch, dinner, snacks, drinks in the last 24 hours?
- Snack between meals? Y/N
- What type?
- What do you drink?
- What things are good for you to eat? For health?
- What things are bad for you to eat? For health?
- What do you not like to eat?

COPING

- Do you generally feel they have enough to eat?
- Do you feel all your kids are healthy?
- Have you ever not had enough to eat? Y/N
- Why was this?
- How did you get through the situation?
- Emergency – where go?
- Do you receive any external help?

CHANGES

- In their opinion, is life now easier or harder and why?
- What would they like to change if they could?
- How hopeful are they about the future?

FINANCIAL CAPITAL

- Have a bank account?
- Have insurance?
- Loan?
- Reasons why...

VIOLENCE

- Do they personally know anyone who has been hurt, mugged, kidnapped or killed? Details.

EXTRA QUESTIONS FOR TRADERS

- What they are selling?
- Do you grow what you are selling? Y/N If not, where do you buy it, in what quantities, how often?
- Location and what time the bigger traders come?
- Is product Guatemalan origin? If not, where is it from? Y/N

- Do you trade anywhere else apart from the town we are in? Y/N City?
- How do you know what to charge and why and when do prices change?
- Are the prices now higher or lower than normal?
- When prices rise a lot, what is typically the reason?
- Have you always traded the foods we see now? Y/N
- If not, what have they traded before and why did that change?
- Has your supply chain ever been disturbed Y/N
- If yes, detail please
- How did you cope?
- What are some of the main changes they have seen in food trade?

APPENDIX B

KEY INFORMANTS & THEIR BACKGROUNDS

- Director of Health and Nutrition at Sololá Hospital
- Nutrition Programme Worker at the Sololá Health Centre
- Programme Monitoring and Evaluation professional at the government central municipal office in Sololá
- Director of the government department for food and nutritional security SESAN (La Secretaría de Seguridad Alimentaria y Nutricional)
- Director of Ministry of Agriculture MAGA (Ministerio de Agricultura, Ganadería y Alimentación).
- The Founder, a Director of Operations and a Programme Evaluator of Ak'Tenamit (an the indigenous-run NGO organization)
- Latin America Director and employees of my host organization Pencils of Promise – a US-based educational NGO
- Communications officer of Plan International
- Programme Worker of Hope Guatemala
- Programme Director of British NGO Health, Poverty, Action

APPENDIX C

DESIGN, PILOTING AND ADMINISTRATION OF FOOD FREQUENCY QUESTIONNAIRES

A key issue that surfaced in every single expert interview was that one of the biggest causal factors contributing to malnutrition and food insecurity is lack of knowledge of healthful practices, and where knowledge exists, lack of healthful behaviours. To test this hypothesis a semi-quantitative food frequency questionnaire was administered to 16 participants including four pilot exercises to refine the tools and 12 final exercises. A comprehensive list of 64 common food items was derived from 24 hour recalls in main interviews carried out with informants in the town and personal observation of most common foods consumed in eateries (Appendix D). Additional items were derived from the INCAP (Institute of Nutrition of Central America and Panama) Food Frequency Questionnaire sourced from Rodríguez, Méndez, Torún, Schroeder & Stein (2002). These 64 items were used in the pilot exercises. This proved a too large a number whilst some items were seen as repetitive or confusing, so the list was refined and reduced to a 38 item questionnaire for which sorting cards were produced and administered in the same order (Appendix F) to the 12 final participants (4 men, 8 women, half living in urban areas, half in rural). Pile sorting exercises of what was regarded fruits, vegetables or herbs were carried out to ascertain some of the cultural nuances in their definition. The notes for these are included in Appendix that outlines the 64 original items in the pilot exercises.

In the initial pilot exercises participants were asked to sort the cards into 6 pre-defined frequency categories to aid analysis. This proved a hard task and following recommendations of Rodríguez, et al (ibid.) subsequent exercises were carried out with open frequency recount over the previous three months. The exercise was designed to capture current food consumption and the knowledge of healthful food consumption practices as participants were asked to name their current consumption frequency of each item and what they felt was the optimum consumption frequency to maintain good health in a hypothetical scenario without financial, seasonality or other barriers.

Background information on livelihoods and utilization of rural-urban linkages was collected as well as follow up questions of reasons for consumption frequencies. Selection was targeted through stratified sampling to include equal numbers of people from urban part of Solola and rural areas. The urban sample included three indigenous women, an indigenous man and two ladino women and within the rural sample were included five indigenous women and one indigenous man to capture the important subgroups and attempt a representative sample with regards to indigenous/ladina populations of the department. Although food and cooking is almost entirely a female domain and many interventions thus focus on education of women, albeit food preference of husbands in Guatemala can dictate consumption of the entire household. To compare knowledge to expert opinion, a nutrition programme worker at the health center and the director of health and nutrition at the hospital both completed the exercise once to indicate consumption frequency they would recommend for each item in the hypothetical scenario. Food pyramid guidelines and other official nutritional guidelines were also consulted.

APPENDIX D

PILOT 64-ITEM FOOD FREQUENCY LIST AND PILE SORTING EXERCISE NOTES

Beef	Pork	Chicken	Fish	Dairy	Vegetables	Cereals, Rice, Grain	Sweets	Western Foods	Corn and Beans	Dishes with mixed possible ingredients	Potatoes	Fruits	Liquids and Sauces	Drinks
Churrasquito (grilled beef)	Embutidos (salchichas, chorizos, jamones)	Eggs	Ceviche	Cheese	Vegetables	Rice	Chocolate	Pizza	Frijoles	Tostadas (hard fried tortilla usually served with toppings such as guacamole, beans, sauce) - street food and prepared at home	Papas fritas (fries/ chips)	Fruits	Sopas	Alcohol
Carne Guisada (meat in sauce containing hieba, ajunjojin, pepetoria, chili, peppers - all liquidised)	Carne de cerdo	Pollo Dorrado (deep fried breaded chicken)	Pescado Dorrado	Yoghurt	Hierbas	Breakfast cereals	Biscuits and cookies	Hamburgers	Tortillas	Pulques (meat or chicken in tomato based sauce thickened with masa. Herbs such as coriander and spring onions are bunched together and tied for the cooking but taken out once ready)	Torta de papa	Berries	Incaparina o Mosh	Gaseosas
Torto de carne (ground beef burger with spices and herbs and served with tortillas not bread)	Tamales - made for special occasions - rice cooked with tomato and chili sauce with pork wrapped in a leaf, sometimes has potatoes in it.	Caldo de pollo (chicken and vegetable stew)	Caldo de Marisco	Milk	Mushrooms	Bread	Cakes	Sauces: tomato ketchup, mayonnaise, mustard	Popcorn	Tacos - corn based dried folded thin pancake - usually served with beef or chicken	Papas cocidas (boiled)		Chile - spicy sauce of various ingredients each with their own recipe, like chillies, red peppers, tomatoes, coriander).	Coffee
Milanesa de rez (beef steak egg-washed, topped with bread-crumbs and fried)	Chicharrones (deep fried pork bits)	Chow mein (spaghetti or thick noodle cooked with chicken)			Avocados or guacamole	Rice soup	Candy, sweets	Sandwiches	Elote loco (corn on the cob sold as street food covered with salt, mayonnaise, ketchup and cheese)		Ensalada Russa		Chirmoles (tomato-based home made sauce)	Water
Caldo de Rez (beef and vegetable stew)		Pollo en champinones			Other salads	Spaghetti or pasta			Habas - whole beans				Atol de masa (corn-based prepared at home)	Fresco
						Tortillas								Tea
														Fruit juices

APPENDIX D (continued)

Notes:

1. The category of berries was an interesting one since both indigenous women with whom pile sorting exercises were carried out had never heard of the word 'bayas' and there is no such category in Kaqchikel, the category was subsequently removed from final exercise.
2. *Hierbas* are a very special group to indigenous Guatemalans and contain within them leafy greens, some root and leafy vegetables. Some mentioned in this category are: 1. Leafy greens - hierbas blancas, hierbas morras, *bledo* (no direct translation, has long seedy green to burgundy floral stems growing from the centre), chard, spinach, *chipilin* (no direct translation, leguminous plant), the stem and leaf from potato plant (although apparently not good taste), *kilete* (which is the tip of the choyote); vegetables in this category: cauliflower, broccoli, turnip, cabbage.
3. Vegetables as a separate group include: guisquil (green choyote), guico (green squash), perulero (green choyote), zanahoria (carrot), elote (corn on the cob), lachuga (lettuce, although more considered a salad and not a vegetable), tomatoes, potatoes
4. Eggplant is rarely eaten by Guatemaltecos as they do not generally know how to cook it
5. Sopas – do not denote soup as we would expect it to be in the Western world. Sopas specifically mean a packaged soup such as Maggi (a Nestle brand). It is generally a vegetable broth thickened with an agent. People add their own vegetables and perhaps some fideo pasta to it. A 65g package of Maggi's Crema Hongos soup mix for 5 servings contains on the ingredients list: Harino de trigo (wheat flour), salt, almidon de maiz, grasa vegetal, leche descremada, hongos, azucar, glutamate, monosodico (2,18 % como acentuador del sabor), cebolla, aroma hongos artificiales, curcuma color natural, inosinato disodico. Could contain pescado, camerones, protein de soya, apio, ajonjoli. Per porcion 47 kcal, 1g protein, 7g carbohidrados, 2g grasa. Its taste is a little artificial, but definitely an edible food.
6. Incaparina and Mosh. Incaparina was a drink introduced in 1961 by INCAP Instituto de Nutricion de Central America y Panama. Commercial atol-like product. Used to taste bad, so people did not buy or use it, but now tastes better. Incaparina is corn based, mosh is wheat based. Pre-packaged cost 8Q/lb, sold per pound from large sacks 4Q/lb.
7. Salads: Russian salad is a potato and mayonnaise based salad, other salads using more nutrient vegetable carbohydrate groups include raddish, cucumber, onions, tomatoes, lettuce.
8. Ortalisas – also vegetables

APPENDIX E

FOOD FREQUENCY EXERCISES – FINAL 38 ITEM QUESTIONNAIRE

Card No.	Foods	Food Group
1	Frijoles, Habas, Jote	Cereals (natural)
2	Tortillas	Cereals (processed)
3	Chuchitos/Elotes	Cereals (natural)
4	Platos de Aroz: Aros, Sopa de Aroz, Males	Cereals (processed)
5	Hierbas, Verduras, Vegetales	Vegetables & Fruit (low carb)
6	Frutas	Vegetables & Fruit
7	Papas Fritas, Torta de Papas	Vegetables & Fruit (high carb)
8	Papas Cocidas, Ensalada Rusa	Vegetables & Fruit (high carb)
9	Sopa de Sobre	Vegetables & Fruit (high carb)
10	Queso	Dairy
11	Leche	Dairy
12	Yoghurt	Dairy
13	Helado	Sweet
14	Pan, Pan Dulce, Pan en Sandwiches	Cereals (processed)
15	Cereales de Desayuno	Cereals (natural)
16	Dulces, Galletas, Pastel	Sweet
17	Chow Mein, Pasta, Espaguetti	Cereals (processed)
18	Tostadas, Tacos, Paquette de Papa	Junk & Snacks
19	Chicharrones	Meat (high fat)
20	Embutidos, Caldo de Cerdo	Meat (high fat)
21	Carne Dorrado, Milnea de Rez, Torta de Carne	Meat (high fat)
22	Caldo de Rez, Churrasquito	Meat (low fat)
23	Pollo Dorrado	Meat (high fat)
24	Caldo de Pollo, Piluque de Pollo	Meat (low fat)
25	Pescdo Dorrado, Pescado Seco	Meat (high fat)
26	Caldo de Marisco, Ceviche	Meat (low fat)
27	Atol de Masa, Incapatina, Mosh	Cereals (natural)
28	Frescos Naturales, Liquados, Jugos de Frutas	Vegetables & Fruit (low carb)
29	Café	Liquids (personally added sugar)
30	Te	Liquids (personally added sugar)
31	Agua Potable	Liquids (no sugar)
32	Agua Pura	Liquids (no sugar)
33	Gaseosas	SODAS
34	Hamburguesas, Pizza, Hot Dog	Junk & Snacks
35	Alcohol	Alcohol
36	Additivo de Azucar, Miel, Mermelada	Sugars
37	Aditivo de mayonnaise, mantequilla, margarina, ketchup	Fats
38	OTHER (please specify)	

APPENDIX F

NOTES ON CULTURALLY APPROPRIATE AND SENSITIVE STUDY DESIGN

Throughout the research it became clear that communicating what information we are asking participants to provide would prove difficult. Not only was this the case because for many Spanish is their second language if they speak it all (although hiring a local indigenous woman helped in this regards), but also because most are poorly educated and thus unfamiliar with surveys and studies and most are suspicious of anyone asking questions since due to the internal turmoil of the 36 year civil war, memories are still fresh of deathly punishments for speaking.

In addition, language nuances surfaced frequently and one of the biggest learning curves that occurred during the study was the importance of culturally appropriate and sensitive study design. Firstly, some of the urbanites were asked whether or not they grow home gardens instead. The ladino Spanish-English translator that accompanied me in the research used the Spanish word *jardin* to ask the questions and many would reply that they did not (Andrews, 2004). In reality, it turned out, that there are several definitions of what a home garden may be. For example, a study into the meaning of home gardens in nearby town of San Andres, Sololá using sort pile cards illuminated that mainly flowering plants and medicinal herbs fell into the '*jardin*' category, whilst many fruit, vegetable and herbs fell into the *huertos* category, another word for garden. There was also a third possibility, a *hortilaza* which is similar to a *huerto*, with some notable differences. "*Only difference is that a huerto is smaller and it usually contains trees. It is also more closely (geographically and figuratively) associated with the kitchen than hortaliza. Hortaliza is considered to be outside of the house and it looks more like an agricultural field than a garden.*" (Andrews, 2004:7). Additionally, I also came with my own pre-conceptions of what may constitute a home garden. I grew up in Russia with my parents on my father's side living in a town not dissimilar to Solola. They had land called *dacha* but also a home garden including a large chicken coup. However, when people were asked to talk about what they had in their gardens or farms, at first no one mentioned animals. Only when they were specifically asked about farm animals would people mention them.

The translator having grown up fairly well-off in the city with maids and no connection to the land or home gardens was also of course not to know the intricacies in the definitions. In addition, the translator did not have experience in social sciences and in the beginning had led many questions. Given that my Spanish level was good enough to understand most things, I could tell where the data we collected was not reliable. As a result, before proceeding further, a full day training was held with the translator including several role-plays and feedback exercises to help him understand the importance of ethical considerations, correct language, patience, non-prejudice, impartiality and minimizing biases by eliminating leading questions. Subsequently I was a lot more comfortable with the quality of the data we collected.

Finally, when asked about favourite or most often consumed foods during 24 hour recalls, many pointed to hierbas (herbs). Further investigation revealed that hierbas are a very special group to indigenous Guatemalans and contain many edible leaves and flowers. In addition, for some people certain root vegetables fell into this group. Pile sorting exercises using 54 different fruits, vegetables, berries, nuts and seeds were separately carried out with two indigenous women which revealed that even between

two individuals what falls into the group of herbs and what into the group of vegetables can vary. Some mentioned in this category are: 1. Leafy greens - hierbas blancas, hierbas morras, bledo (no direct translation, has long seedy green to burgundy floral stems growing from the centre), chard, spinach, chipilin (no direct translation, leguminous plant), the stem and leaf from potato plant (although apparently not good taste), kilete (which is the tip of the choyote); vegetables in this category: cauliflower, broccoli, turnip, cabbage. Finally, there is no concept of 'berries' for either Spanish or Maya-speaking Sololátecos, instead berries fall into the category of fruits. These investigations highlighted the need to specify hierbas as a distinct category within the food frequency exercises, whilst leaving out the category of berries.

These types of insights were incorporated into subsequent semi-structured interviews meaning that invariably with each new respondent the data was more rich, negotiated and so on. Much of these insights occurred early enough on to make majority of the data richer and more locally understandable and negotiated. It did cause myself a little concern as it meant the information of interest grew to such a degree that I was worried about the length of time required to collect all of it, especially in the setting of the market where talking with traders was interrupted with their selling and servicing their customers. Whilst this was a little less of a problem in the central plaza and interviews that took places in small shops and stores outside the main plaza. Results were filtered accordingly based on where it was felt that the information was less reliable due to lack of prior insight.

As a personal learning point perhaps it would have been ideal to have time to prepare much more in advance. Although, the realities of researching and some of the intricacies of local knowledge could only be faced whilst 'in the field' and not from previous research since local nuances and definitions and limitations are rarely offered in academic, official and NGO reports outside of anthropological literature.