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Assessing the socioeconomic impact of a rural market: The case of Mt Hagen Market in the Papua New Guinea Highlands

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Abstract

This study of the Mt Hagen Market was undertaken to assess the socioeconomic impact of the Mt Hagen Market Redevelopment Project that was supported by the Australia-PNG Incentive Fund. Since its completion in late 2006, the Mt Hagen Market has produced significant and positive economic and social outcomes. Impact has extended well beyond Mt Hagen and Western Highlands Province to neighbouring Highlands provinces and coastal areas. The Market provides thousands of people with income-generating opportunities in vegetable and handicraft production and marketing. The majority of these beneficiaries are women, many of whom have become the primary providers for their families and key contributors to their communities. Their social status has improved accordingly and the women reported a sense of empowerment. Despite these highly positive impacts, a lack of support services for market traders and of higher-level aspirations and prospects for young women and street youths was noted. This appeared to be linked to a lack of education and training opportunities. In addition, there are serious issues of over-crowding, law and order breakdown, sales of prohibited store goods, illegal collection and misuse of market fees, and deterioration of market facilities and market services in recent years. The last is mainly as a result of a combination of an increased demand for these services because of the PNG mining boom and of mismanagement. Our main recommendations for improving the Market's performance include:

- Separation of fresh produce from livestock and general store goods;
- Separation of retail and wholesale markets for fresh produce;
- Public awareness and enforcement of market rules and regulation;
- Training of market operators in business skills and postharvest management; and
- On-going monitoring and assessment of market management by independent third parties.

Key words: rural market, Papua New Guinea, fresh produce marketing, institutional reform.

Introduction

The Mt Hagen Market, the largest and most modern fresh produce open market in Papua New Guinea, was redeveloped in 2006 with assistance from the Australia-PNG Incentive Fund under the Mt Hagen Market Redevelopment Project. The project was aimed at boosting the income of

[1] We would like to thank all stakeholders of the Mt Hagen Market consulted for giving their time generously for the interviews and sharing their views on issues and insights for a way forward.

Highlands' farmers and providing them the best avenue for marketing their produce. The Market was equipped with features that at the time were found in no other PNG market. Since its opening, there has been massive movement of fresh produce and people every day at the Market. Initial reports indicated a substantial increase in the volume of rural produce traded in the Western Highlands province and expanded trade to other parts of PNG. The new market has created formal employment opportunities for market staff and numerous informal income-earning opportunities for growers and sellers in the PNG highlands. Improved working conditions and security have encouraged more women to engage in agriculture and as traders of fresh produce. The iconic market is widely seen locally as a gift to PNG women from AusAid.

However, since late 2008, the delivery of services and the maintenance of market facilities and law and order have been gradually deteriorating coincident with a change in management. At the same time, there is a tremendous opportunity for the Market to serve the community even more because of the high demand for fresh produce due to the development of the PNG LNG project and several other large-scale natural resource extraction projects. There are serious concerns over the current management and sustainability of the Market and the likely impact on the community should the Market cease to function as intended. The objectives of this research were to assess the impact of the Market on the agricultural system and women farmers and sellers who rely on the Market for their livelihood and to provide recommendations for sustaining its social and economic performance.

Methodology

Both qualitative and quantitative methods were used for data collection and analysis. Research methods used in this study include the following:

- Literature review of relevant documents and reports;
- Personal interviews with key stakeholders and government agencies in Port Moresby: AusAID, Australia-PNG Incentive Fund, Department of Planning and Monitoring, Legal Division of the Department of Provincial and Local Government Agency, Institute of National Affairs, and National Research Institute;
- Personal interviews with key stakeholders in Mt Hagen: market management, wholesalers, contract buyers, market vendors, farmers, consumers and other market users, provincial agricultural advisors, community-based organisations (CBOs), NGOs, and agricultural organisations, and microfinance providers;
- Focus groups of market vendors, street youth, and fresh produce growers; and
- Collection and analysis of primary and secondary market data (see below).

Semi-structured questionnaires for personal interviews were used to ensure consistency of topics covered so that patterns in responses can be determined (see Appendix).

In addition to soliciting the views and perceptions of key stakeholders on the performance and impact of the Market, data on the following were collected:

- Number of crops sold in the Market;
- Number of retailers in the Market, by crop, by gender, and by selling location (from the bench vs on the floor);
- Number of wholesalers and contract buyers in the Market;
- Frequency of shopping in the Market and money spent, by consumers and institutional buyers;
- Price paid and received, and gross margin, for key crops;
- Number of bags traded in the Market and in stock;
- Number of people using the toilets, by gender; and
- Estimates of market takings and expenses.

Secondary sources were used to determine demand and supply status of major crops. Retail prices for 20 key crops for 2009-2012 and for sweet potato for 2004-2012 were sourced from the Fresh Produce Development Agency (FPDA)'s urban market survey database, as well as from the PNG-LNG market study (Chang et al., 2013a) and the socio-economic surveys conducted by Wilson and Hehona (2008). Attempts were made to obtain financial details of the market operation from market management (Hagen 2 Investments and Wamp Nga Holdings) to determine the financial viability/profitability of the Market.

Mt Hagen Market Redevelopment Project

Rural markets play a crucial role for local communities both in social and economic terms. They provide a critical source of income generation, especially for women, and a venue for social interactions and the exchange and dissemination of information (Marocchino, 2009). However, women who trade in the market in PNG and other Pacific Islands often have their work dismissed as marginal, unskilled and unimportant (Cox, 2011). Governments all too frequently ignore the substantial contributions that women market traders make to local and national economies – they connect urban consumers with rural producers, pay significant fees that subsidise municipal town planning ventures and provide economic support to countless households and communities throughout the Pacific Islands.

As a result of marginalisation and neglect, rural markets are often in poor condition, described by women traders across the Pacific Islands as inadequate, unsanitary, hazardous, unsafe and unfair (see e.g. Chang and Be'Soer, 2011; Brearley, 2005; UN Women, 2012). The old Mt Hagen market was described in the Mt Hagen Redevelopment Project proposal as "having no water or toilets, [being] extremely over-crowded with vendors sitting on the ground". The project therefore aimed at addressing some of these issues facing women who trade in the Market, its stated goal being "[t]o provide market facilities and training to further develop local sustainable economic growth by encouraging and increasing local agriculture and handicraft production and sales to the benefit of rural producers and urban consumers, particularly women who play a key role in this sector" (UN Women, 2012).

The Mt Hagen Market Redevelopment Project was funded by the Australia-PNG Incentive Fund (IF) at a cost of K7.5 million (approximately AUD3 million at the time) (IF, 2007). IF was established during the 1999 Development Treaty negotiations between the Government of Australia (GoA) and the Government of Papua New Guinea (GoPNG). It was intended to increase the range and level of involvement of PNG organisations in development aid and to reward those organisations that delivered priority development while demonstrating their efficiency, effectiveness and accountability (IF, 2008). There have been three phases of the Incentive Fund:

- Phase 1: 2000-2003 Papua New Guinea Incentive Fund (PNGIF);
- Phase 2: 2003-2008 Australia Papua New Guinea Incentive Fund (APNGIF), which supported 39 projects for A$113 million; and
- Phase 3: 2010-2014 Incentive Fund, which supported 6 projects for A$17.2 million (DFAT, 2014).

Over the years, the Incentive Fund has delivered some of PNG's most high profile developments including infrastructure projects and projects impacting on health, education and income generation. The Mt Hagen market is one of the most high profile projects.

The Mt Hagen Redevelopment Project was proposed by Wamp Nga Holdings in association with Mt Hagen Rural Local Level Government (RLLG). The proposal was accepted in October 2004 and the construction of the new market was completed in December 2006. The new market was equipped with 1800 selling spaces for fresh produce, livestock and handicrafts, an administration building, male and female toilets, a wholesale building, reserve water tanks, standby power, baby nappy change rooms, first-aid post, shops, offices for extension officers[2], police and security guards, telephone, and EFTPOS machines. These features were found in no other PNG market at the time. In addition to a robust physical infrastructure, the new market also provided a range of services in health and education, as well as market information.

It was also in the proposal for the establishment of a Board of Trustees to oversee management of the Market (IF, 2004).[3] The 2007 Immediate Evaluation conducted by the Incentive Fund found that all

[2] The role of extension officer is to inspect quality of the produce sold in the Market and provide technical advice to growers to improve the quality of the produce grown and sold in the Market, as well as liaising with agricultural organisations, wholesalers and growers to facilitate dissemination of market information (IF, 2004).

[3] The establishment of a Board of Trustees to oversee management of the market does not appear to be a requirement of the IFA. The establishment, composition and role of the Board of Trustees were detailed in the Program Completion Report prepared by Wamp Nga Holdings, which was considered an excellent initiative by IF. The Board was to comprise representatives from women's groups, the agriculture sector, business houses, farmers, government departments and others. The Board's role was to set strategies for: asset sustainability; expansion of facilities; development of satellite markets; public awareness programs; market health and hygiene; and improved market management. The current Board does not seem to reflect these aspirations in relation to composition and function.

output indicators had been met (i.e. all agreed facilities and resources had been completed and were being used as intended). At that time the Market was being managed by Wamp Nga Holdings Ltd. Wamp Nga Holdings Ltd is jointly owned by the Mt Hagen RLLG (60%), Anglimp LLG (20%) and Neibilyer LLG (20%). In late 2008, for reasons unknown (other than local politics), the Market management was taken over by Hagen 2 Investment Limited, a business arm of Mt Hagen RLLG[4]. Delivery of services and the maintenance of market facilities and law and order have since been gradually deteriorating while there is an expansion of market staff and security personnel and revenues.

Impact on the Agricultural System

The Market has had a significant impact on the farming communities in Mt Hagen and Western Highlands/Jiwaka Provinces. In this section, we discuss the changes that the Market has induced, and the impact it has had on production and marketing systems and demand and supply of fresh produce. Our discussion is based directly on interviews with a large number, and comprehensive cross-section, of stakeholders and direct observations around Western Highlands province (WHP) and Jiwaka province.

Production

Based on the number of farmers coming to the Market, the frequency of their visits, and the variety of vegetables available, it is clear that more and more farmers are involved in semi-commercial and commercial vegetable production. Farmers no longer come to the Market to sell marketable surpluses of subsistence food crops (such as sweet potato and local greens). Instead, they grow a wide variety of vegetables specifically for the market - especially introduced cool-climate temperate crops such as broccoli, eggplant, tomato, lettuce, potato, capsicum, spring onion, cabbage, etc.

These vegetables are the most important cash crops in terms of sales and are a significant source of income for farmers in WHP/Jiwaka. In other provinces income sources were more diverse, with fresh produce featuring less prominently (Wilson and Hehona, 2008). Fresh vegetables are currently in high demand and demand is expected to grow in the foreseeable future as the PNG economy develops as a result of mine developments. Accordingly, the Mt Hagen Market should be expected to continue to play an important role in supplying high quality fresh produce throughout PNG while supporting the livelihoods of farmers and market traders in WHP/Jiwaka and nearby provinces.

As demand for fresh produce has increased, more land has been cleared. There are new and large gardens along the Highlands Highway from Minj to Tambul and to Tomba, as well as in villages along feeder roads. Evidence of coffee gardens being replaced by vegetables was common in areas close to Mt Hagen.

Production has become more specialised. Different vegetables are grown in separate gardens, rather than the traditional intercropping where sweet potato (the main staple crop) is grown together with banana, cassava, corn, Aibika, peanut, etc.

To meet the market requirements for quality and consistency, chemicals and fertilisers are increasingly being used to control pests and diseases and to improve yields. Crop rotation is practised less, and fallow periods have been reduced or dispensed with.

Casual labour is being hired to supplement, or in some cases to replace, family labour, as farmers devote more time to marketing and expanding production.

Mono-cropping, increased chemical use in farming and increased land clearing may become increasingly problematic, but are not serious concerns right now as they are not widespread. Most farmers interviewed were of the view that agricultural chemicals are too expensive to use. Also, there is no land shortage in general terms. However, the environmental impact of increased chemical use and land clearing will mount over the longer term and cause irreversible damage to the environment unless managed.

[4] The previous Mt Hagen Market was established in 1969 by the Mt Hagen Local Level Council. When the Mt Hagen Town Authority was established in the 1990s, responsibility for most of the town functions was transferred to the new authority, but the market stayed with the Mt Hagen Local Level Council (renamed as Mt Hagen Rural Local Level Government). This means Mt Hagen RLLG retained ownership and control of the market after the establishment of the Mt Hagen Town Authority (or Mt Hagen Urban LLG).

Marketing

Selling practices at the Mt Hagen Market have changed significantly since the market redevelopment (Table 1). Many farmers we interviewed no longer sell direct to consumers in the market. Rather, they sell in bulk to market traders, including resellers at the Market, contract buyers representing local businesses (e.g., Hotel Kimininga, Highlander Hotel, Best Buy) or the mines (Porgera, the PNG LNG sites, Ramu Nico, Ok Tedi, etc), wholesalers (who deliver to supermarkets or catering services in Port Moresby and around the country), and middlemen (who buy in bulk and on-sell to other buyers). Most market traders are women, both in retailing and wholesaling.

Table 1. Seller and buyer types prior to and after the redevelopment of the Mt Hagen Market

Market characteristic	Before 2006	March 2007	March 2013
Stalls	<1,000	1,800	2500 (1,800, bench & 700, floor)
Farmers – Retailing in the market	200 – 300	1,200 – 1,800	1000 (mostly subsistence farmers)
Farmers – Selling in bulk	100	500 – 800	1000-2000
Re-sellers	160	400 – 500	1,500
Wholesalers	3	8	8
Contract buyers	4	<10	71
Middlemen[5]	NA	NA	100 plus

There are several reasons for the separation of growing and selling. First, farmers now understand that they can be more productive and make more money by focusing on production rather than selling (and socialising) in the market all day. Second, the Market has become quite crowded and most bench spaces are occupied permanently by resellers so that, even if they want to sell in the market, they cannot find bench space. Third, if they sell in bulk to the buyers, they can return home quickly. This means they don't need to worry about missing the last public motor vehicles (PMVs) or risk their own safety going home late in the day. By specialising in the production of 2-3 vegetables and selling in bulk to buyers, farmers can achieve efficiency gains stemming from the division of labour and specialisation.

Specialisation, either by individual farmers or by region, also makes consolidation of fresh produce possible, which encourages buyers to source directly from the village. Although most fresh produce traded at the Market was brought in by farmers, some buyers collected it from the village, especially when there was a short supply. This is an ideal situation for all parties concerned because it avoids multiple and rough handling of fresh produce when transporting it to the market by PMVs, and it also saves farmers' time.

Over 90% of open markets in PNG were previously dominated by women farmers (Benediktsson, 2002). Re-sellers were viewed with suspicion and contempt. They were referred to as "black marketers". However, resellers have become a dominant force in the Mt Hagen Market. In 2007, the Mt Hagen Market Redevelopment Immediate Assessment Report (IF, 2007) indicated that resellers accounted for 40% of the sellers. In 2012, FPDA found that the figure had increased to about 80%. Some of the full-time resellers were previously farmers. The change from farmer to reseller occurs because re-selling can provide steady income and more profits and is much less laborious than farming. Resellers claimed to have made good incomes by rural PNG standards.

The large number of resellers has created a problem for farmers wanting to sell in the Market; they are unable to find a space. Without the option of selling in the Market, farmers are forced either to

[5] This group of traders, which are relatively new to the market, act as the middlemen between farmers and resellers/contract buyers/wholesalers. These traders, predominantly women, specialise in buying and selling in bulk. According to an informant, there were more than a hundred women buying in bulk from farmers for re-packing and on-selling to resellers/contract buyers/wholesalers. Most of these women are from Mt Hagen Central, Dei Council, Kindeng, Kuli, Kondipina, and Tomba.

take the vegetables home unsold or to sell them cheaply to bulk buyers. As more and more bench spaces in the Market are taken up by resellers, there needs to be a strategy to assist farmer-sellers so that they can continue to benefit from the Market as it grows and expands.

According to theory, marketing margins reflect useful marketing services that market intermediaries provide to their customers. However, our research showed that the marketing margins were very high relative to the services provided. For example, a middleman can buy a bag of cucumbers for K30[6] and on-sell it at K40 to K50 - a 33%-67% mark-up for seemingly little effort, compared to that of the farmers' time and effort – planting, harvesting, packing and transporting to the market. Similarly, we found the mark-ups for resellers in the Market range from 30% to 100%. The possible reason behind this seeming lack in contestability in the Market is the lack of market information on the part of farmers. The majority of them do not come to the market frequently enough to know what the prevailing market price is and many of them do not know their own production and marketing costs. Farmers also typically lack the business skills and self-confidence to negotiate for a better deal against the more business-savvy full-time re-sellers.

Many consumers and contract buyers interviewed complained about the high costs of fresh produce in recent years. The involvement of middleman and the large mark-ups could be one contributing factor, in addition to demand increases and general inflation. Price increases are a serious concern for the fresh produce sector as a whole because it reduces consumption of local produce and makes local produce less price competitive with imports. The direct result could be an increase in imported fresh produce. More in-depth research is needed to understand how the value created by marketing is distributed along the supply chain and whether farmers are receiving a fair share of the consumer dollar.

Two things still have not changed with respect to marketing practices, however. Firstly, the majority of farmers are still marketing their own produce regardless of the distances to market and the small holdings they have. Many farmers we interviewed went to the Mt Hagen Market 2 to 3 times a week with 2 to 3 bags each time. This is economically inefficient. If marketing arrangements can be made so that farmers can consolidate the produce and either take turns to go to the market selling for each other or have buyers come and pick up the vegetables from their village, there will be considerable efficiency gains and cost savings. Unfortunately, few farmers engaged in collaborative marketing despite the potential economic gains (better quality produce, lower marketing costs, attracting big buyers, more bargaining power, etc).

Secondly, the postharvest handling and packaging of fresh produce remains inadequate along the supply chain despite the presence of an extension office aimed at providing such technical advice to growers and traders. We observed cabbage, pineapple, broccoli, and sweet potato being pushed forcefully into white poly bags and sometimes filled over the top so vegetables were exposed. There seems no concern for quality, no awareness of market requirements and no understanding of potential economic gains from supplying better quality products. The lack of proper transport and storage infrastructure and grades and standards for fresh produce makes it very difficult to address quality issues.

Gender role

Another new development is the involvement of men in selling at the Market. Traditionally, fresh produce retailing was viewed as a woman's role, except for "male" items such as Highlands' bananas and sugar cane (Benediktsson, 2002). However, more men are taking up marketing in the Market. A common reason given was the lack of other job opportunities, especially for those who were forced to leave their home village and move to the city due to tribal fighting.

Others reported taking up marketing because it is an easy way of earning money. In PNG, men do not take up women's activities because of stigma associated with that, unless financial returns for their involvement are high and, in that case, they may gradually take over from women. Highlander men are known for their forcefulness and aggressiveness. This could become a problem if women were harassed or pushed back to less profitable activities or back to the farm. This is a concern because previous research has shown that men tend to spend a high proportion of their income on entertainment for themselves, while women tend to spend their income on family and children (Cox, 2011). When male sellers were asked how their income was used, they said that they shared the

[6] The exchange rate at the time of our research was approximately K2.2 for A$1.

income fairly with their wives and other family members. We were unable to verify this response with their partners.

On the other hand, the involvement of men in fresh produce marketing could potentially raise the status of women sellers if they were seen to be involved in the same business as men. We calculated that males accounted for 13% (185 out of 1371) of the sellers of 10 key crops sold in the Market. Policy concerns related to equity and distribution of benefits would therefore imply the need to monitor the involvement of men in the fresh produce market.

Our informant interviews and direct observations also indicated that men were becoming more involved in gardening, housework and looking after their families. This was especially true when women were full-time traders in the Market. This is a divergence from the traditional patriarchal nature of PNG Highlands' societies. These changes are good from social and economic perspectives, as more equitable partnerships between husbands and wives generate higher household incomes and foster mutual respect (Chang and Be'Soer, 2011). One would expect these social changes to help reduce incidents of violence against women, and marginalisation of women, in the PNG society (Benediktsson, 2002; Brearley, 2005; UN Women, 2012).

Wilson and Hehona (2008) studied the division of labour between men and women in the household in six provinces in PNG. They found that the percentages of husbands and wives working together were much lower in Western Highlands province (WHP)/Jiwaka[7] (43% in production and 27% in marketing), compared with Eastern Highlands province (EHP) (59% in production and 40% in marketing) and other provinces in PNG (Table 2). During our research, we observed numerous couples, especially young couples, selling in the market or working in the garden together.

Table 2. Gender roles in the growing and selling of major fresh produce in PNG

Responsibility for growing major fresh produce (%)							
	WHP/Jiwaka	**EHP**	**Morobe**	**East New Britain**	**Central**	**Milne Bay**	**Total**
Husband	21	19	18	14	9	20	17
Wife	30	19	22	19	6	15	20
Both	43	59	60	64	77	59	58
Other	6	3	0	3	8	7	5
Responsibility for selling major fresh produce (%)							
	WHP/Jiwaka	**EHP**	**Morobe**	**East New Britain**	**Central**	**Milne Bay**	**Total**
Husband	19	21	4	6	4	7	12
Wife	47	36	76	72	33	68	51
Both	27	40	16	19	52	15	30
Other	8	4	4	3	12	10	7

Source: Wilson and Hehona (2008)

We also found that, because of improved opportunity for selling locally, many farmers no longer took their vegetables down to coastal markets in Lae, Madang or Port Moresby. This is also a positive development as long distance marketing without proper packaging or cool chain is plagued with high marketing costs and high product losses (Chang et al., 2013b).

Prices

In the March 2007 Immediate Impact Assessment Report of the Mt Hagen Market it was indicated that there was an oversupply of vegetables soon after the Market was opened. According to an informant interviewed, prior to the opening of the new market farmers were encouraged by various government departments to increase production of fresh produce. Unfortunately, the new market did not create

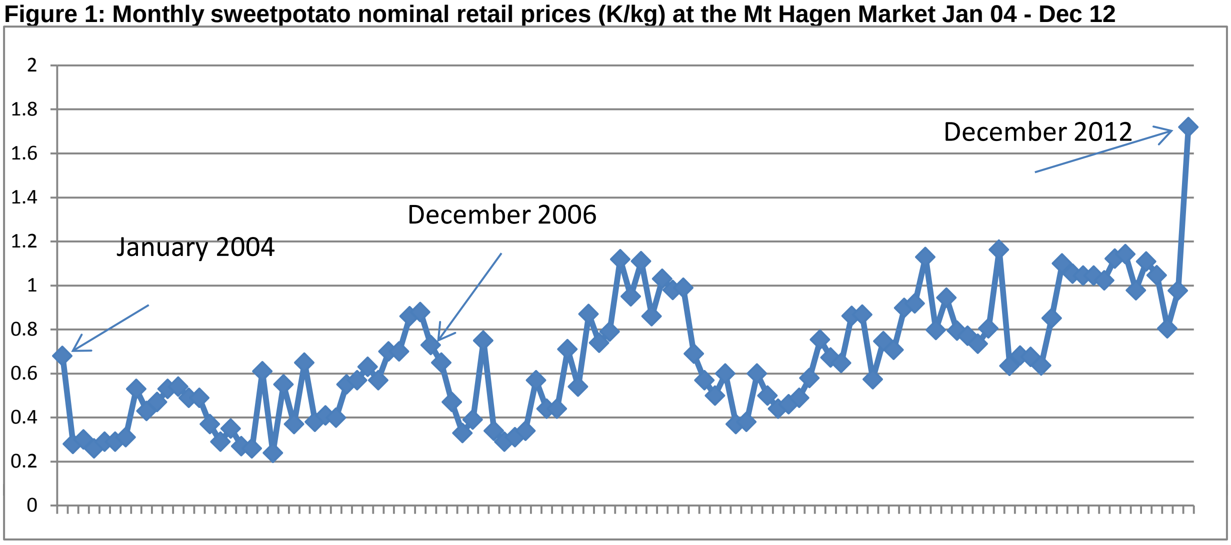
[7] In 2009, WHP was split into WHP and Jiwaka province.

sufficient demand to absorb the increase in supply. As a result, some produce was unsold and farmers encountered product losses and low prices.

Based on the data for sweet potato (the most important staple food crop in the PNG highlands) from 2004 to 2012, there was indeed a drop in price at the Mt Hagen Market in December 2006 and subsequent months (as shown in Figure 1) as a result of the imbalance in demand and supply. However, the market did adjust and the price recovered some months later. The zig-zag pattern, which is common for most vegetables in the Mt Hagen Market, reflects frequent changes in fresh produce supply in the PNG highlands. Inconsistent supply has been attributed in part to the influences of weather on agricultural production and in part to the lack of technical and business skills of PNG farmers to meet market demand (Peter, 2001).

We also analysed the retail prices, in nominal terms,[8] for twenty key vegetables in the Mt Hagen Market from 2010 to 2012, covering the period before and after the construction period of the PNG LNG project. The results were consistent - most vegetable prices had trended upward – a rough indication of demand outstripping supply, despite great variations from month to month.

Figure 1: Monthly sweetpotato nominal retail prices (K/kg) at the Mt Hagen Market Jan 04 - Dec 12



Demand increase from the PNG LNG project was forecast to be most significant in 2012-2013, with the demand for fresh produce being in the order of 130 tonnes a week (or nearly 20 tonnes a day) (Chang et al., 2012). Fresh produce supply traded through the Hagen wholesale market was estimated to be in the order of 80-100 tonnes/week. Therefore, oversupply was certainly not a concern during our assessment and probably will not be for the foreseeable future as the resource boom continues.

Access to support services

Based on interviews with farmers and several microfinance providers in Mt Hagen, there has been an increase in demand for microfinance by farmers because of the growing demand and higher prices for vegetables and broiler chickens.

Interviews with the People's Action for Rural Development (PARD) indicated that loans made by its Women's Village Bank were used primarily for agricultural production (Figure 2). The largest group of borrowers (45%) used their loans for raising broiler chickens. Demand for fresh chickens is high at the Mt Hagen Market with price ranging from K20.00 to K30.00 per bird. Approximately 14% of borrowers used their loans for vegetable production and a further 8% used loans for production of potatoes, peanuts or citrus. Most of these women sell their products at the Mt Hagen Market. Almost 8% invested in sales of store goods at open markets. Coffee buyers accounted for a further 7% of borrowers.

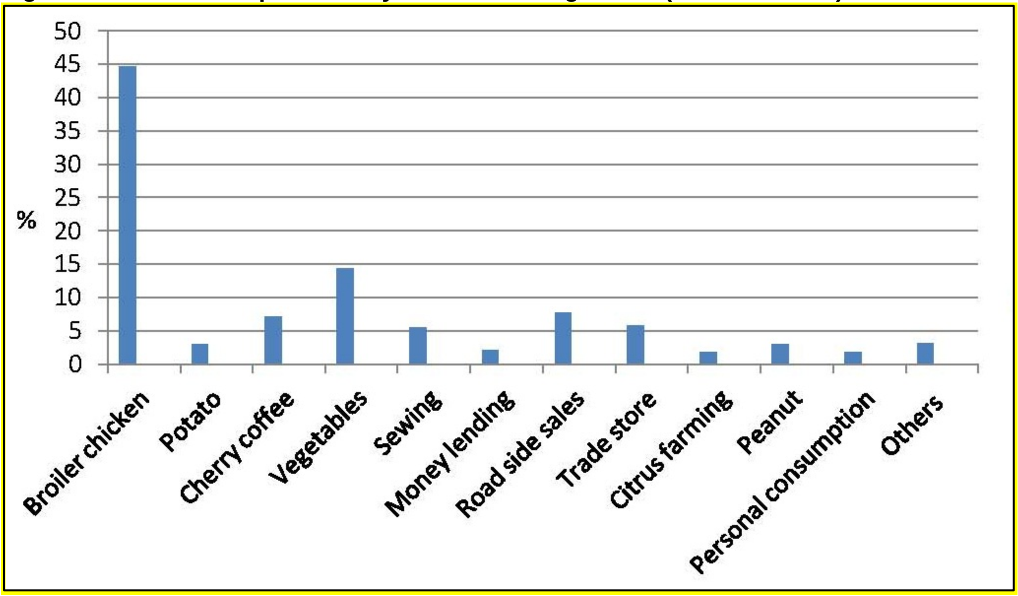
With 700 clients, PARD's loan portfolio in 2011 was valued at over K1 million with K0.5 million in total savings. By comparison, Nationwide Microbank is much larger in terms of outreach, products, and

[8] We were unable to convert the nominal monthly prices to real prices to adjust for inflation because CPI figures released by the Bank of PNG are on a yearly and quarterly basis.

portfolio value. At the end of 2012, Nationwide's loan portfolio was valued at K26m, with deposits of K64m. Further, Nationwide has over 100,000 customers.

According to PARD, small business loans are available to individuals but there are few takers. Lack of business skills and financial literacy make it difficult for most farmers and market traders to contemplate expanding their current operation or starting a new business. Most market resellers interviewed were not aware of the availability of microfinance and did not have a savings account.

Figure 2: Use of loans provided by Women's Village Bank (Source: PARD)



A significant number of community-based organisations (CBOs) have been formed in recent years in WHP/Jiwaka mainly to access microcredit. Many of them were based around vegetable farming communities (Minj, Banz, Tomba, Kindeng, Wahgi Flat, etc). This is because the National Development Bank, PNG Microfinance, and Nationwide Microbank all prefer group loans to individual lending when dealing with smallholder farmers. Joint liability and built-in peer monitoring in group loans help avoid the issue of lack of collateral on the part of borrowers while reducing transaction costs for the banks (Chang et al., 2013c). A group loan often requires the borrowers to be a member of a CBO. Although CBOs can be used to serve many other purposes such as group marketing and access to training and extension, this appears not to be the case in the areas studied. The main reason for lack of group action within existing groups, as claimed by the informants, were a lack of leadership and management skills of office bearers and a lack of funds to implement proposed projects.

There are several organisations and NGOs which work with farmers in WHP/Jiwaka. FPDA is the most active government agency in agricultural extension, providing technical training on vegetable and potato production through its Village Extension Workers (VEW) Program. Since 2011, FPDA has also included financial literacy training in its VEW training program. Although FPDA has made a significant contribution to the development of the vegetable sector in WHP/Jiwaka, their outreach is still quite small - limited to the training of 10-12 VEW groups for 3-5 years. FPDA also provides extra training sessions to farmer groups upon request. But their services are not well publicised and are constrained by a shortage of staff and lack of funding. Given the recent market development, it seems appropriate for FPDA, and other service providers, to include postharvest management, marketing and business acumen in their training so that farmers and supply chain operators can upgrade their skills to take advantage of the marketing opportunities presented to them by the resource boom.

We did not identify any significant collaboration between agricultural organisations and NGOs or church groups as the former tend to focus on agriculture while the latter focus on social issues (adult literacy, health, sanitation, gender equality, etc).

In our study, we found no group or association of any form among market resellers. This observation concurs with the study of Port Moresby markets (UN Women, 2012). This lack of organisation makes it harder for market resellers to voice their concerns and demand their rights with Market management or to access information and support services. It is a concern that the majority of women sellers did not have a savings account and knew nothing about microfinance or how to access credit or other support services.

Social and Economic Impact

The Mt Hagen Market has produced significant and positive outcomes for the local economy and for producers, market traders and consumers. However, the impact is not spread equally among different actors. In this section, we examine the impacts and issues faced by urban settlement women sellers, farmer-sellers and young women.

Urban settlement women sellers

The Market is now dominated by resellers and the majority of them are from settlement areas in or near Hagen town. Settlers have originated from Enga, Southern and Chimbu Provinces. All the women we interviewed expressed gratitude for the Market as a nice work environment made possible by the funding from AusAID. They said that the Market has given them not only an opportunity to generate income, but "good" money, which has improved their standards of living and enabled them to send their children to school – a top priority for them. Their husbands, grandparents and other relatives take care of their children when they are conducting business in the Market.

The Market has been a safe and comfortable place for them to work, especially when compared with the old market and other markets in the region. During our field research, we surveyed the markets at Banz, Kaiway, Newtown, Hagen Airport, Minj and many roadside markets. It is clear that the Mt Hagen Market has the best market facilities in the Highlands (and possibly all of PNG).

These women are proud to be the main providers for their families and claimed they are in full control of their incomes. They talked about being "empowered" - being financially secure, making decisions of their own, and gaining respect from their husbands and other family members. There is clearly a sense of pride and satisfaction in their improved capacity and social status.

The main concerns for them were law and order issues such as pickpockets and stealing, and occasionally drunken males coming to the Market asking for money, starting fights, damaging produce and destroying market facilities. We were told that, in March 2012, the Market was closed for a couple of weeks during a fight between two tribes, allegedly over market takings. The cause of the fight was attributed by one group to an isolated alcohol-related incident but by the other to mismanagement. The incident, like many other criminal activities, was not investigated and perpetrators were not punished.

Smallholder farmer-sellers

Responses and perceptions of farmer-sellers regarding the Market were varied. Some had several complaints, including a lack of access to bench space, harassment by security staff, being made to pay extra market fees and lack of access to water. Farmer-sellers complained about not being able to secure bench space and thus being forced to sell on the floor. During our visits to the Market, a significant number of farmers were selling in walkways, in courtyards, and in pathways outside the roofed main structure, without shelter and surrounded by pools of dirty water. We did a head count of sellers of 10 key crops in the Market and found that, of the 1371 people counted, about 40% of them were selling on the floor without a table. 99% of them were women. The situation was worst for women selling local leafy vegetables, with 60% (278 out of 535) of them selling from the floor. Most of the women who were selling on the floor were smallholder farmers from villages out of town. They travelled into town by PMV and by the time they reached the Market all the selling bench spaces had been taken.

According to the supervisor at the Market, leafy vegetables take up more bench space as they are bulky, and sellers choose to sell on the floor to avoid paying for extra space. This did not make sense because sellers were also charged for using the floor space. An alternative explanation was that there was simply not enough bench space available for all sellers, despite the fact that they have been charged the gate fees upon entry.

Resellers living in town appear to have a natural locational advantage over farmers travelling long distances into town. Many bench spaces were "claimed" by full-time or permanent resellers who stamped their claim either by placing plastic sheets over the bench or leaving the stock underneath the table. We heard that fights occasionally broke out over selling spaces. The situation was made even worse and more unacceptable when spaces were taken up by store goods, jewellery, plastic bags, etc. Selling of those goods is prohibited by market rules. If the objective of the Market is still to provide local farmers with a safe and comfortable place to sell their garden produce, then there must be a clear policy on how bench spaces are allocated, how much is reserved for local farmers, whether it is on a first-come, first-served basis or by pre-allocation through registration.

The lack of water in the Market was another common complaint. When the Market was first opened, the produce wash areas were equipped with taps and running water. But the taps were vandalised three or four years ago by local landowners who were unsatisfied with job allocations at the Market. They have not been operational since. This forces women farmers to cart water from the village, adding significantly to their already heavy loads of vegetables and making their life unnecessarily harder. It is also unfair because they have already paid for the service through market gate fees. At the time of our research, all of the offices in the administration building had been vandalised and were closed. The amphitheatre that was designed for making public announcements was used by wholesalers for sorting and packing vegetables. Many questioned: "where have all the gate fees collected gone?" They heard that the market takings from gate fees alone were in the order of K8,000 a day.

To estimate the income generated from the market gate fees, the research team did a head count on all the traders and the number of bags present at the Market. The statistics are shown in Table 3.

Table 3. Traders and bags present at the Mt Hagen Market, 10am, 18 March 2013

Trader type	No of traders
Farmers selling in bulk	107
Bulk buyers for local businesses	2
Bulk buyers for other locations	17
Sellers occupied the floor inside the market	855
Sellers occupied the bench	1447
Total number of bags in stock inside the market	2045
Total number of bags in stock outside the market	227

There are a few things to note from the figures presented in Table 3. First, 2300-2500 sellers were in the Market, designed for 1800, and there were about another 120 wholesalers transacting several thousands of bags a day in a market that was designed mainly for retailing. Second, the number of people selling on the floor (about 40%) is astonishing. Third, as market fees are charged both by bench space occupied and by the number of bags traded - double payment was another issue raised by market traders - the market fee takings per day were estimated to be in the order of K8,000 – K10,000.[9]. These numbers suggest serious problems of both over-crowding of the Market place and pilfering of market takings. Innovative ticketing and payment systems (e.g. seasonal tickets) could be established to limit the use of the current cash payment system which provides significant scope for market staff to overcharge and steal market fees.

Young women

During our field visits to the Market and the villages, we took note of young women's involvement in agriculture – some were resellers in the Market and some were farmers. It was clear that the Market, by improving access to the market, has provided an added incentive to be involved in agriculture. Young women involved in farming reported being assisted and supported by their husbands or by their siblings.

Young women farmers and re-sellers were found to be better educated than the generations before them. Most of the older women selling in the market have been doing it for 10 to 20 years or more as they were uneducated with few other employment opportunities. This suggests that better opportunities exist for the new generation to become businesswomen and entrepreneurs if there are training and education and mentoring programs to help them set goals and upgrade their business and leadership skills.

[9] With 2500 sellers (assuming each occupied one bench space and was charged K2) and 2272 bags (each was charged K2), then the market takings for that day was close to K10,000 on a busy Monday. This figure confirmed the K8,000/day that we received from other sources.

Another issue facing young women in the Market was the access to childcare. We observed young mothers breast-feeding their babies under the table, and babies sleeping on the ground. The Health Clinic, which provided vital services to market users and children in the early days, was closed down a couple of years ago when the Coral Sea Hotels chain withdrew their funding (we were unable to determine the exact date). The loss of this socially inclusive initiative has reduced the social benefits of the Market.

We consulted with Mercy Works, a church charity group that provides training to street youth, including those working in the Market as taxi boys[10]. Mercy Works was concerned about the welfare of the taxi boys on several fronts. The first was their lack of education and aspirations for the future. Second, they tend to spend their relatively huge income on fast foods, alcohol, gambling, and drugs. Third, some bags are too heavy for their age/weight and they can get injured, which may have a long-term effect on their health. We learned that Hagen was under the radar of the International Labour Organisation (ILO) for child labour laws violations, referring in particular to the under-aged taxi boys working at the Mt Hagen Market.

Mercy Works is trying to educate street youths on personal hygiene and healthy living, as well as providing literacy training and preparing and encouraging them to go back to school. Mercy Works also works with street girls, teaching them how to sew. Their main concern was for girls engaging in prostitution at night without protection, risking personal safety, contraction of HIV/AIDS and other diseases, and unwanted pregnancies.

Mercy Works would like to do more with street youths, but their work is limited by funding based mainly on donations.

Key Issues and Recommendations

There is no doubt that the Market has delivered significant socioeconomic benefits by providing income-generating activities and a safer and more comfortable workplace for thousands of women and youths. However, there are issues and problems that must be addressed to sustain its social and economic outcomes in the longer term. Main issues identified from the study include over-crowding/under-capacity and lack of support services for market users.

Key issue 1: Over-crowding/under-capacity

Under-capacity is an overarching problem in the Mt Hagen Market and a negative consequence of its success. The main causes are the unforeseen high demand for fresh produce, spurred on by the development of several large resource projects, and the selling of prohibited items. The results of under-capacity are: lack of bench spaces, congestion at the gate and inside the Market, health and safety hazards, proliferation of organic waste, and opportunistic pick-pocketing and theft.

As a result of the rapidly increasing demand for fresh produce, not only has the selling floor inside the Market exceeded its capacity, but also there is a tremendous increase in the wholesale trade for which the original market was not designed. Wholesale trade causes significant congestion both at the gate, outside the Market and inside the Market. Chaos was observed everywhere, especially at the gates and at the wholesale section in the mornings, with buyers, sellers, gate fee collectors and taxi boys rushing around when trucks and PMVs pull in with bags of vegetables. It is a potential health and safety hazard for everyone concerned.

Regarding the selling of prohibited items, the Market has regulations governing what can and cannot be sold. For example, betel nut, store goods and processed foods cannot be sold. Exceptions are cooked bananas and winged beans, prepared sugarcane and pineapples and some handicrafts and clothing made locally. There are regular disputes with vendors selling prohibited goods. However, store goods continue to be sold and are increasing in numbers. It is clear that this is allowed to happen as a result of poor management control[11]. The selling of prohibited items has taken away bench spaces from those wishing to sell fresh produce. This particularly affects farmer-sellers who come to the Market only occasionally to retail their own produce.

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[10] Taxi boys are boys aged between 12-25 who carry bags into and out of the market. They charge a service fee for K2 a bag. It was alleged that they could make K150-200 a day on a good day. Some of these boys are suspected of pick-pocketing and stealing.

[11] It is easy to blame market management for everything that goes wrong in the market. However, things are not as clear-cut in PNG given its complex cultural and political contexts that are often beyond comprehension by outsiders. Management issues are discussed in detail in the full report to IF (Uniquest, 2013).

Another issue is that the Market adjoins a major bus stop and several shops, including a liquor store. This results in heavy traffic and large numbers of public users concentrating around the Market, which may have encouraged the selling of store goods.

Under-capacity also exacerbates hygiene problems. During our field visit to the Market In March 2013, there were approximately 120 chicken sellers with 15 to 20 birds each. Chicken sellers used significant bench area in addition to the cages provided (although few are in good order). Chicken sales areas, which were located on one side of the Market, are now contiguous with vegetable sales areas. The health risks associated with this mixing requires further assessment and relevant action.

Waste disposal has been a problem since day one. Waste management was cited as an issue in the March 2007 Immediate Impact Assessment of the Mt Hagen Market, only 3 months after the Market's opening. At that stage it was noted that the substantial amount of organic wastes generated – around 2–3 tonnes/day - was an issue that needed to be addressed. Today, especially during the pineapple season (December to March), waste generated can increase to 10–15 tonnes/day. The vast majority of the waste is cast onto the ground. The high sugar content causes rapid organic breakdown and unpleasant odours. The high acid content eats into the concrete in the waste areas slowly deteriorating the lime-based concrete surface. Waste contractors have been engaged to remove rubbish, but the backlog of waste is never cleared. Substantial piles of organic waste also build up in areas outside the Market, where they pile up and sit untended.

Although we observed that all parts of the Market were busy and crowded, the two wholesale depots (with cooling facilities) on the western side are exceptions. They appeared to be deserted. It seems there is potential for the depots to be better utilised for the receiving and storing of fresh produce.

Recommendation 1. To reduce problems caused by under-capacity in the short term, the Mt Hagen Market management should:

- Develop clear policies and guidelines for the allocation of bench spaces and payment of market fees for full-time sellers and occasional farmer-sellers, as well as for the wholesale trade;
- Enforce the market laws governing the selling of prohibited items to free up spaces for fresh produce;
- Consider alternative uses of the existing wholesale depots; and
- Revise the current contract for waste disposal to allow for flexibility in dealing with seasonal variations in the volume of waste;
- Undertake research into the feasibility of upgrading and redeveloping other existing retail markets in the districts to ease the congestion in the Mt Hagen Market; and
- Undertake research into the feasibility of developing a wholesale market in Hagen for fresh produce only.

Recommendation 2. For future market development, the management should consider the:

- Separation of retailing and wholesaling markets; and
- Separation of markets for fresh produce, livestock, and store goods;

Key issue 2: Lack of support services

An objective of the Hagen Market redevelopment program was "to provide market facilities and training to further develop local sustainable economic growth …". However, the Market had provided little training to market staff, sellers, farmers, and consumers that facilitated the production and sales of local agricultural production and handicrafts. There is simply not a venue by which concerns can be voiced and addressed.

Recommendation 3. Provide a venue for dialogue between market stakeholders

A properly constituted Board of Trustees for the Mt Hagen Market, as proposed in the management plan and discussed earlier, could provide a venue for dialogue on increased collaboration between the Market and service providers such as microfinance institutions, NGOs and agricultural organisations. In the absence of an effective Market Board, it may be feasible to consider the formation of a working group or market committee, which would comprise representatives from different stakeholder groups. It would address issues related to market facilities and management as envisioned for the Board of Trustees, as well as issues of training and education for market staff and market users. In the immediate term, a market forum could be held initially to bring together farmers, market traders, NGOs, agricultural organisations, provincial government and LLGs for awareness raising and potential collaboration purposes. This could be followed by the formation of working groups to look into specific issues identified.

Recommendation 4. Provide training and education in the following areas:

- **Public awareness of rules and regulations of the Market**: law and order and management issues as identified in this study reflect in part a lack of leadership and must be addressed through a change of management structure and the development of clear policies. However, it also reflects the ignorance and lack of information on the part of market users regarding the functions of the market and their role in it. Market users and staff must be instilled with a sense of responsibility and ownership for the upkeep of a well-functioning market. Initial awareness campaigns should focus on clarifying the issues of ownership of the Market and the management structure.
- **Gender training for market management and market staff**: the majority of market users are women, while the majority of market staff and board members are men. Poor market facilities and mistreatment and harassment of women, especially older women and women farmers, often reflect the marginalization of women in society. Gender training can help raise awareness of gender inequality, change perceptions of gender roles, and reduce incidents of violence against women.
- **Personal viability training and education for young women and street youths**: the market has provided good economic outcomes for young women and youths. However, social and development outcomes could be further improved if there were opportunities for enterprising rural youths to broaden their perspectives and upgrade their skills that empower and enable them to be self-reliant and entrepreneurial.
- **Financial literacy training and access to microfinance for women farmers and market sellers:** access to microcredit and financial literacy are important in supporting smallholder farmers and market sellers. The former provides the necessary seed money for them to engage in income-generating activities while the latter helps them manage the money that has been generated.
- **Postharvest management/marketing/business acumen training for fresh produce producers and handlers:** to compete with imports, the PNG fresh produce supply chain must improve its marketing efficiency, product quality and consistency in supply. For that to happen, supply chain operators from farmers to retailers must upgrade their skill sets and work together to address marketing issues.

Conclusions

The upgrading of rural markets should both improve the physical infrastructure and contribute to development objectives of poverty alleviation, livelihood improvement and gender equality in rural areas. The design and initial operation of the Mt Hagen Market Redevelopment Project concurred with this. Based on our interviews with women farmers and sellers, the Market had given them not only an opportunity to generate income, but money well above the normal income of salaried workers. This higher income had improved their standards of living and enabled them to send their children to school – a top priority for them. With the steady income from the Market, women had become the main providers for the family and were in full control of their income. They were "empowered" - being financially secure, making decisions of their own, and gaining respect and support from their husbands and other family members.

There have been significant and positive changes in agricultural production and marketing systems in the Highlands region, especially in the past 3-5 years. Commercial production of introduced vegetables has increased significantly, largely in response to increased demand from PNG's booming resource sector. Much of this increased demand is channeled through the Mt Hagen Market - the largest fresh produce market in PNG. The important role the Mt Hagen Market plays in supplying PNG with fresh produce is expected to continue in years to come.

Concurrent with an increase in production has been an increase in specialisation by farmers. Most farmers now concentrate on production of two to three crops. Relatively few sell directly to the public. Instead, they sell in bags to bulk buyers such as resellers, contract buyers and wholesalers. There is further specialisation by region. This specialisation by crop and region has seen farmers shifting from subsistence farming to commercial enterprises, and achieving efficiency gains in the process. However, marketing costs and postharvest losses can be reduced with improvements in postharvest handling and collaborative marketing of produce.

There is no doubt that the Mt Hagen Market has delivered significant economic benefits to the region. However, there are still issues and problems that must be addressed to sustain and broaden the impact of the Market in the longer term. These include: clarifying ownership and management of market assets; improving the delivery of services in waste management and water supply; improving security and law and order; educating the public about market rules and regulations; providing training and education to various market stakeholders in postharvest management and marketing/business skills. Lessons learned for future market development projects include the merits of the separation of markets for fresh produce, livestock, and store goods and of the separation of retailing and wholesaling markets for fresh produce.

References

Benediktsson, K. (2002), Harvest development: The construction of fresh produce market in Papua New Guinea, Nordic Institute of Asian Studies: Denmark.

Brearley T. (2005), 'Increasing the autonomy of women as a means to improving community well-being and facilitating development: An exploratory study in Papua New Guinea'. Report for ACIAR Project ASEM/2001/037 Improving the marketing system for fresh produce from the highlands of PNG.

Chang, H.S. and Be'Soer, L. (2011), 'Improving sweetpotato marketing PNG: A gender perspective', *Stewart Postharvest Review*, 3:12.

Chang, H.S., Lutulele, R., None, R., Maia, Z. and Hape, P. (2013a), 'Meeting the demand for fresh produce from the PNG LNG market: Opportunities and challenges', *Australasian Agribusiness Perspectives*, Paper 95. http://www.agrifood.info/review/2013/Chang_et_al.pdf

Chang, H.S., Irving, D., Lutulele, R., Komolong, B. and Be'Soer, L. (2013b), 'Improving marketing efficiency, postharvest management and value addition of sweetpotato in PNG'. ACIAR Final Report FR2013-02 for ASEM/2006/035, ACIAR, Canberra.

Chang, H.S., Dowa, E., Malie, R., Anton, C., Anamo, I., Dekene, P. and Bubun, D. (2013c), 'Linking smallholder farmers to microcredit providers in Papua New Guinea: A participatory action research approach', *Australasian Agribusiness Review*, Vol. 21, pp.60-82. http://www.agrifood.info/perspectives/2012/Chang-et-al-2013.pdf

Cox, E. (20110, 'Pacific markets and market vendors: literature review and annotated bibliography', UN Women, Suva, Fiji.

DFAT (Department of Foreign Affairs and Trade). (2014), 'Where we give aid: Papua New Guinea: the Incentive Fund – Phase 3'. http://aid.dfat.gov.au/countries/pacific/png/Pages/initiative-incentive-fund.aspx

IF (Australia PNG Incentive Fund). (2007), 'Mt Hagen market re-development: Immediate impact evaluation'.

IF (Australia PNG Incentive Fund). (2008), 'Papua New Guinea-Australia Incentive Fund (Phase III): Program design document: post peer review'.

IF (Australia PNG Incentive Fund). (2004), 'Incentive Fund Agreement between AUSAID and Wamp Nga Holdings Limited in relation to Mount Hagen Market Redevelopment'.

Marocchino, C. (2009), 'A guide to upgrading rural agricultural retail markets'. Agricultural management, marketing and finance working document, No. 24. Agricultural Management, Marketing and Finance Service (AGSF), Rural Infrastructure and Agro-Industries Division, Food and Agriculture Organization of the United Nations, Rome.

Peter, R. (2001), 'A survey to establish causes of inconsistent supply of fresh produce to the wholesale and retail market sectors'. Report prepared for Fresh Produce Development Company.

Uniquest. (2013). 'Long term sustainability of impacts of the Mt Hagen Market and market management: A social research report'. Final report prepared for the Australia-PNG Incentive Fund.

UN Women. (2012), 'Making Port Moresby safer for women and girls: Report on scoping study findings. UN Women Papua New Guinea and Safe Cities Free of Violence against Women and Girls Global Program'. Port Moresby, Papua New Guinea.

Wilson, T. and Hehona, D. (2008), 'Report on the 2008 FPDA socioeconomic survey'. Report prepared for the Fresh Produce Development Agency, Papua New Guinea.

Appendix. Semi-structured questionnaires used to address research questions

Has the market had an impact on agricultural models in Mt Hagen and Western Highlands Province?

Focus group of VEWs and farmers in Tambul, Kindeng, Minj, Banz; and focus group of provincial/district councils of women and women's group leaders in Tambul, Kindeng, Minj, Banz.

- Have you noticed any changes in land use in your area? In what way?
    - Do people still practice shifting cultivation? How long is the fallow period? What was it before?
    - Has more land been cleared for fresh produce production?
- Has farming intensity changed (ie same areas of production and garden size, but use more other inputs)?
- Do people use more purchased seeds and fertilisers/chemicals vs own seeds and traditional fertilisers/chemicals?
- Do people irrigate/water regularly during drier periods?
- Do they rely on family or hired labour?
- Do they do inter-cropping vs mono-cropping?
- What kind of rotation?
- Has farming become more or less diversified?
- Do people specialise in growing some vegetables?
- Have people change the types and volumes of fresh produce produced;
- Do people grow more cash crops and less food crops,
- Do people grow some vegetables specific for selling to the market
- Do people change from subsistence farming to semi-commercial and commercial production?
- Changes in selling practices by farmers
- Have you noticed any changes in land use in your area? In what way? For example:
- Where do farmers sell their produce to?
- Do they have a target market to sell to before planting? Or before harvesting?
- Do they market their produce themselves or sell to traders?
- Do they sell to traders individually or as a group?
- Do they sell to Lae, Madang, POM, etc?
- When selling to traders do they sell to wholesalers or black marketers (re-sellers)?
- What is the percentage sold by each selling method? Why?
- How often do people sell to the market? Are they selling more and more frequent now than before?
- Have postharvest management and packaging changed over time? What else to be done?
- How did farmers and sellers access credit?
- Has the market led to increased access to, or demand for, micro financing?

Personal Interviews of wholesalers and contract buyers in Mt Hagen on:

- How has the number of wholesalers and sellers in Hagen area changed? In what way? Why?
- Where do they come from: local residents vs settlers from other provinces?
- How has the Mt Hagen Market changed their selling methods?
- How has the Mt Hagen Market changed the fresh produce supply?
- Is demand being met or is there an oversupply resulting from the new market?
- How does it affect the price you pay?
- The impact of the market on your margins and incomes?
- Are women more involved in wholesale?
- Were the facilities and services the market supplied sufficient or appropriate for meeting your needs?
- What value was the market to wholesalers and contract buyers?
- Have there been any perverse outcomes as a result of the market? (e.g. poor chemical use, increased land clearing and more work expected from women, or loss of control of finances in the family)
- Data collection and analysis: How has the volume of throughput changed?
- Date collection and analysis: How have the buying and selling prices changed?

Personal interviews and focus groups of women sellers at the market:

- How has the number of sellers inside the Mt Hagen Market changed?
- Are they farmers or re-sellers?
- Where do they come from: are they local residents or settlers from other provinces?
- How has market waste, maintenance and upkeep been managed?
- Has the market been a safe and comfortable place for women to sell?
- Were the facilities and services the market supplied sufficient or appropriate for meeting your needs?
- What value was the market to sellers?
- Have there been any perverse outcomes as a result of the market? (e.g. more work expected from women, or loss of control of finances in the family)

Personal interview of male sellers (farmers and re-sellers)

- Are they farmers-marketers or re-sellers?
- What do they sell?
- How often do they come to the market?
- Are they with their wives? If not, do they take turns?
- How much do they earn (gross) in one trip? (or In a week? In a fortnight?)
- How is the income distributed in this household?
- What are the main expenses?
- Any other sources of income?
- How important is the income from the market sales to their livelihoods?
- How has their life or livelihood changed because of the market?
- Is there any division of labour between production and marketing?
- Any problems encountered at the market?
    - Facilities
    - Security
    - Management
    - Treatment/respect by staff
    - Competition/price/gate fees
    - Transport (costs and availability)
- What solutions are there for these problems
- What services at the market should be improved or provided?

Personal interview of farmer-sellers

- How long have they been selling to the market?
- What do they sell?
- How often do they come to the market?
- Whom do they sell to?
    - Direct to consumers at the market (own sale)
    - To black marketers (by bags)
    - To Wholesalers/contract buyers
- Where else do they sell?
- Have they changed their seeling methods as a result of the redevelopment of the market?
- Have they increased production as a result of the redevelopment of the market? How (eg by clearing more land? Or by using fertilisers, chemicals, etc?)
- Have they changed the vegetables they grow a result of the redevelopment of the market
- How has their life or livelihood changed because of the market?
- Are they a membership of a self-help group, co-op, CBO, etc?
- Have they received any training on production or marketing? If yes, from whom?
- Are they aware of the FPDA office at the market? Have they used the service?
- Do they borrow money? If yes, from whom? And for what purpose?
- Are they aware of the microfinance facilities available to small farmers?
- Any problems encountered at the market?
    - Facilities
    - Security
    - Management
    - Treatment/respect by staff
    - Competition/price/gate fees

    - Transport (costs and availability)
- What solutions are there for these problems
- What services at the market should be improved or provided?

Personal interviews of FPDA and NDAL staff:

- Are farmers growing crops differently since the market has been completed?
- Have you noticed any changes in land use in key production areas? In what way?
- Have you noticed any changes in farmers' selling methods? In what way?
- How has the number of wholesalers and sellers in Hagen area changed? In what way?
- Where do they come from: local residents vs settlers from other provinces?
- How has the Mt Hagen Market changed the fresh produce supply?
- Is demand being met or is there an oversupply resulting from the new market?
- How has price changed over time?
- Has the market led to increased access to or demand for micro financing?
- Have community-based organisations (CBO) access to micro financing increased?
- Are women more involved in wholesale?
- What value was the market to buyers and sellers?
- Were the facilities and services the market supplied sufficient or appropriate for meeting buyers and sellers needs?
- Have there been any perverse outcomes as a result of the market? (e.g. poor chemical use, increased land clearing and more work expected from women, or loss of control of finances in the family)

Interviews with PNG Microfinance, National Development Bank, Nationwide Microcredit, BSP/WestPac/ANZ:

- Has the market led to increased access to or demand for micro financing?
- Have community-based organisations (CBO) access to micro financing increased?
- What value was the market to buyers and sellers?
- Were the facilities and services the market supplied sufficient or appropriate for meeting buyers' and sellers' needs?
- Have there been any perverse outcomes as a result of the market? (e.g. poor chemical use, increased land clearing and more work expected from women, or loss of control of finances in the family)

Has the market improved collaboration between agricultural organisations and NGOs?

Interview NGOs and CBOs, Oxfam; SDA Hagen; SDA Tambul; SDA Anglimp, CBHC, Mercy Works:

- Is there increased cooperation between NGOs/CBOs and agricultural institutions?
- Have community-based organisations (CBO) access to micro financing increased?
- Has the number of CBO being formed increased as a result of the market?
- Were the facilities and services the market supplied sufficient or appropriate for facilitating collaboration between agricultural NGO/organisations?
- What value was the market to buyers and sellers?
- Have there been any perverse outcomes as a result of the market? (e.g. poor chemical use, increased land clearing and more work expected from women, or loss of control of finances in the family)

What impact has the market had on urban women and street youths?

Personal interview of urban consumers

- How often do you shop at the market?
- What do you usually buy? (distinguish store goods, fresh produce, and chickens, etc)
- How much do you spend each trip?
- Do you like shopping at the market?
    - Any problems when you come to the market?
    - What do you like about the market?
    - What do you don't like about the market?
- What do you think about the quality, variety, and price of the produce at the market?
- Are they better over time, or worse?

- Are you able to buy all the fresh produce you need at the market?
- Have you used the toilet or other facilities at the market?
    - What do you think about these facilities?

Personal Interview/focus group of street youth at the market/around Hagen town

- What value was the market to street youths?
- Has there been an improvement in outcomes for street youths due to opportunities associated with the market redevelopment?

Interview/focus groups of NGOs on youth matters, community leaders at the settlements, youth on the street, bag handlers/security at the market, and police:

- Has the market created positive opportunities for street youth?
- Are young women more involved in agriculture as a result of increased market opportunities?
- What have the outcomes been for women in general in Mt Hagen as a result of the market? (financial, skills, status).
- What value was the market to buyers and sellers?
- Were the facilities and services the market supplied sufficient or appropriate for buyers and sellers?
- Have there been any perverse outcomes as a result of the market? (e.g. poor chemical use, increased land clearing and more work expected from women, or loss of control of finances in the family)