



Altered landscapes, altered livelihoods: The shifting experience of informal waste collecting during Hanoi's urban transition

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ABSTRACT

A growing body of literature is concerned with urbanization processes in contemporary Vietnam and how the country's globalizing cities of Hanoi and Ho Chi Minh City are increasingly becoming spaces of consumption. However, much less is known about how these changing spaces accommodate labour, and in turn support livelihoods. Using published empirical data on Hanoi's informal waste collectors from 1992 [DiGregorio, M., 1994. *Urban Harvest: Recycling as a Peasant Industry in Northern Vietnam*. East–West Center, Hawaii, pp. 1–212] and my own data, including a survey of 575 waste collectors and 44 interviews, collected on Hanoi's informal waste collectors in 2006, I explore the experiences of informal waste collectors (waste pickers and itinerant junk buyers) in Vietnam's capital city of Hanoi. I argue that Vietnam's globalizing economy and urban transition have been a catalyst for the growth of the informal waste collector population in Hanoi as well as a partial player in the gendering of this group and the work they undertake.

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1. Introduction

The year 2006 marked the 20th anniversary of *Doi Moi*, the economic 'renovation' policy officially introduced by the Vietnamese Government in 1986. Twenty years on, the economic metamorphosis brought about by these policies has profoundly altered the country, particularly the urbanization process in its largest cities. Indeed, it is argued that Vietnam is beginning one of the most intensive urban transitions in the world (Douglass et al., 2002). The country's official move from an economy based on socialist central planning to one driven by market forces has allowed for "the formation of urban labor markets as well as property markets and markets for goods and services" (Leaf, 2002, p. 24). There is now a growing body of literature concerned with urbanization processes in contemporary Vietnam. However, much less is known about how Hanoi's changing economic and urban landscapes accommodate labour, and in turn support livelihoods. In this paper I explore the experience of informal labour in Vietnam's globalizing capital city of Hanoi.

After *Doi Moi*'s introduction in the late 1980s, migration to urban areas became a major form of spatial mobility in Vietnam (ODI, 2006). Much of the migration in the last decade has been spontaneous and often temporary and circular in form (Geertman, 2007; Resurreccion and Khanh, 2007). The growing economic opportunities in Vietnam's globalizing cities, and the ability to mi-

grate freely as part of the *Doi Moi* package of reforms,¹ have acted as a catalyst for what the popular press has dubbed "ruralization", of Vietnam's major cities (Douglass et al., 2002). This concept of "ruralization" refers to two processes: (1) the spatial expansion of the city into areas that were formally regarded as countryside; and (2) the increasing presence of rural commuters and migrants within urban areas engaged primarily in informal activities (Douglass et al., 2002). Although migration is not a new phenomenon, particularly to the Red River Delta region of Northern Vietnam (Hardy, 2003), temporary and circular migration is an increasingly popular choice for rural residents aware of the wealth of opportunities in the city, and in need of supplementing their low rural incomes. These migrants, referred to as floating migrants, typically reside in a guesthouse or temporary dwelling, without a household registration book (*ho khau*) and without registration with local authorities, for a period of time of approximately 1–3 months (Geertman, 2007).² After a short period of time in the city, many temporary migrants return to the countryside during rice planting and harvest seasons when the demand for labour is highest (Resurreccion, 2005).

¹ In rural areas of Vietnam, *Doi Moi* reforms altered the nature of the rural economy by shifting production from the farm collective to the household unit and easing restrictions on internal migration (Resurreccion and Khanh, 2007).

² An accurate estimate of the total population of KT4, or temporary, migrants is virtually impossible, given that guesthouse owners, who should register their guests with the police, often fail to do so (Geertman, 2007).

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One of the many occupations migrants enter into when they arrive in Hanoi is informal³ waste collecting. Increasing consumption has, unsurprisingly, produced a burgeoning quantity of waste in the city. Remnants from Hanoi's newly built housing stock, discarded consumer durables, and a miscellany of other leftover materials serve as a visible vestige of Vietnam's economic growth; a ready labour force to forage for waste is a potent reminder of the social unevenness of rapid and intense development.

Using published empirical data on Hanoi's informal waste collectors from 1992 (DiGregorio, 1994) and my own data collected on Hanoi's informal waste collectors in 2006, I investigate how this group is impacted by the changing urban and rural dynamics ushered in by *Doi Moi*. This paper contributes to a growing body of literature concerned with urbanization processes in contemporary Vietnam (McGee, 1995; Drakakis-Smith and Dixon, 1997; Drummond, 1998; Leaf, 1999,2002; Smith and Scarpaci, 2000; Douglass et al., 2002) while simultaneously responding to McGee's (2002) call for more case studies on the impacts of urban processes for individuals in different urban areas of South-east Asia. As I will discuss later in this paper, migrants' presence in Hanoi's informal waste-recovery industry is not a new occurrence; however, the number of migrants undertaking waste-recovery as off-farm employment (usually temporarily, but also permanently in some cases) has substantially increased in recent years. Vietnam's globalizing economy and urban transition have been a catalyst for this growth, as well as a partial player in the gendering of the industry and the work within it. Overall, the findings of this research suggest that the livelihoods of Hanoi's informal waste collectors are forged through various processes of change occurring at multiple geographic and economic scales. Before discussing these points in detail, I will briefly discuss some of the characteristics of informal waste-recovery industries and some of the trends in academic literature concerned with this group of urban actors. I will also highlight the research methods used in this study.

2. Informal waste-recovery activities

2.1. Characteristics and demographics of informal waste collectors

Informal waste-recovery industries operate under economic pressure "motivated by demand for recovered materials and the income needs of the labor force" (DiGregorio, 1994, p. 58). In Hanoi, this system consists of a complex hierarchy, which includes a three-tiered network of waste collectors (city-based waste pickers, dumpsite pickers, and junk buyers),⁴ intermediaries (receivers, dumpsite depot operators, and sidewalk depot operators) and dealers (DiGregorio, 1997). Similar hierarchies exist in other cities (Singular, 1991; Medina, 2000; Li, 2002; Hayami et al., 2006). In this paper I will deal primarily with the bottom tier of the waste-recovery system based in the city of Hanoi, and when I refer to this group (city-based waste pickers and junk buyers) collectively I will call them "informal waste collectors". When the discussion warrants

more specified occupational categories, I will use the terms "waste pickers" and "junk buyers".

Typically, waste pickers scavenge for waste at transfer sites in the city, refuse bins and waste carts, and on the street. They do not purchase waste; rather, their income is derived from the sale of 'found' objects. On the other hand, junk buyers, as the name suggests, buy waste. Their customers are typically households, restaurants, small hotels/guest houses and institutions (office buildings, both private- and government-owned). In Hanoi, the iconic junk buyer carries a bamboo shoulder pole with baskets that hang off either side, allowing them to move large quantities of waste at a time. Traditionally, a waste picker, on the other hand, is someone who uses tongs or iron hooks to search through garbage bins and bags left on the street or in waste transfer areas. However, these are merely generalizations; in practice, junk buyers also ride bikes and waste pickers do not always use equipment. Furthermore, these occupational categories are flexible since people who are primarily junk buyers sometimes pick waste and waste pickers sometimes engage in junk buying. Regardless of these variations, it is still useful to draw on previously defined occupation categories.

In terms of the demographics of the industry, there are no particular characteristics that can universally apply to all waste collector populations. The task of waste collecting is undertaken by young and old, as well as by both men and women. In some countries, the occupation is undertaken by a combination of the urban poor and rural migrants; in other countries the occupation is partially fuelled through external migration. Because few authors carry out large-scale random sample surveys, it is difficult to determine the exact demographics of cities' waste collector populations. However, prior studies in Vietnam suggest that in the early 1990s, the gender divide amongst waste collectors operating in Hanoi and Ho Chi Minh City was relatively even (DiGregorio, 1994; Mehra et al., 1996). In Hanoi, DiGregorio found that women accounted for 58% of surveyed waste collectors. In 2006, my research found that this figure had risen to 94%. Moreover, the average age of waste collectors in 2006 was 38 years. This is a stark shift from the early 1990s when DiGregorio found that more than one quarter of the waste collector population in Hanoi was between the ages of 10 and 19. An analysis of the rationale behind these shifts, particularly the shift in gender, will follow in subsequent sections.

2.2. Trends in informal waste-recovery literature

As a number of authors point out, official attitudes towards collaboration with informal waste-recovery actors is generally "overwhelmingly hostile" due to the fact that the activities of this group of workers are often "socially stigmatized as dirty, unhealthy, chaotic and illegal" (Baud et al., 2001, p. 11–12; also see Mehra et al., 1996; Nas and Jaffe, 2004). This group is often seen as a source of embarrassment for cities, and an impediment to development (or modernity), and thus is not recognized for its contribution to urban waste management (Romanos and Chifos, 1996; Ngo, 2001; Nas and Jaffe, 2004; Medina, 2005). As Singular succinctly notes, "the occupation at once requires and bestows low status" (1991, p. 139). As a result, a number of authors are now calling for more empirical research in order to place informal waste-recovery industries on the political agenda in developing countries (Nas and Jaffe, 2004; Medina, 2007). Furthermore, they argue that informal waste-recovery industries are integral to sustainable urban development and thus more case studies and comparative research should be conducted to validate and/or expand present contextual models.

Indeed, sustainable urban development is one of the emergent issues found in recent literature concerned with informal waste-recovery activities. Baud et al. (2001) argue that in cases where

³ The term "informal" is used to describe the relationship between workers and the state; while informal waste-recovery workers are providing an essential service to municipal governments, their contribution is informal, or without official sanction or recognition. I do not extend the term informal to the internal structure of the trade. In fact, the internal configuration of the informal waste-recovery trade is quite 'formal' in the sense that it is highly organized and has a recognized structure (which may vary by locale).

⁴ City-based and dump-site based waste pickers are sometimes referred to as "scavengers". However, the negative connotations associated with this term have led me to prefer the use of the more neutral term "waste picker".

“informal actors” are integrated⁵ into “formal” waste management organizations, positive benefits are accrued in terms of both socio-economic and ecological sustainability, and in terms of improved public health. More specifically, they argue that waste collectors can contribute to “cleaner urban neighbourhoods, financial viability (of waste management organizations), reduced volumes of disposed waste through recycling, re-use, and composting, and employment creation for predominately poor people” (Baud et al., 2001). Other authors offer variations on this theme (Kaseva and Gupta, 1996; Medina, 2000, 2005, 2007; Ojeda-Benitez et al., 2002; Nas and Jaffe, 2004; Hayami et al., 2006; Madsen, 2006; Monero-Sanchez and Maldonado, 2006; Wilson et al., 2006). Furedy (1999) argues, “a comprehensive view of MSWM (municipal solid waste management). . . would recognize the importance of maintaining and extending all safe practices associated with materials diversion, recovery and recycling in (Asian) cities” (90). Medina (2007) argues that: “scavenging can be a perfect example of sustainable development” (preface/ix). Ironically, while much of the literature on waste collectors now praises their ability to promote a “sustainable” urban environment, urban development itself may pose a threat to some of these workers’ ability to both “sustain” the environment and to “sustain” their livelihoods.

Both DiGregorio (1994) and Furedy (1999) have raised the issue of how urban change may threaten the operation and further development of informal waste-recovery industries.⁶ DiGregorio, in his 1994 study of Hanoi, noted that road construction had already forced the relocation of recovery operations along the city’s inner ring road; Furedy (1999), speaking more generally of economically developing Asian countries, suggests that changes occurring through urbanization and shifts in planning policy at the international, national, and municipal level can adversely affect informal waste-recovery activities. Thus, it is increasingly apparent that contemporary processes and patterns of economic and urban development, while valued and desired by some, may involve the construction of barriers for others (Graham and Marvin, 2001). However, what have been neglected in research with waste-recovery industries to date are actual empirical case studies on the impacts of economic and urban change on workers’ livelihoods. Are all waste-recovery actors impacted equally? Or, alternatively, do some people flourish from this change while others flounder? If so, why? What are the conditions that create this inequality? These questions were at the forefront of this research project, and are what I will attempt to answer in the remainder of this paper.

3. Research methods

The research for this paper was conducted over an eight and a half month period of fieldwork in Hanoi, Vietnam. It consisted of two parts: a quantitative survey, using multi-stage random sampling; and qualitative interviews, designed to add depth to the survey results. The research was carried out with the assistance of Vietnamese research assistants, due to my lack of fluency in Vietnamese.⁷ I hired two supervisors to lead a team of six undergraduate research assistants. Each of the supervisors had acquired training and experience conducting surveys and interviews prior to joining my project. Both the supervisors had completed degrees in Environmental Economics from the National Economics University in Hanoi; the six research assistants were at various stages (ranging from sec-

ond to fourth year) of degrees in the same discipline. All assistants were orally fluent in English (although their written English skills varied). Each research assistant was hired on the basis of their enthusiasm for the project, their ability to effectively communicate with the study population, and their translation skills. Furthermore, each research assistant was given in-office and in-field training exercises prior to the commencement of the surveys.⁸

The scripts for the surveys were developed partially before arriving in Vietnam, but were created in large part ‘on-site’ with the assistance of the two research supervisors. In order to ensure that their translations were accurate, I hired an independent translator who back-translated the Vietnamese script to English. We also extensively pre-tested the survey script with our research subjects. After each test, the research supervisors and I would discuss problems and amend the survey script accordingly.

In June and July of 2006, for a period of seven weeks, my research assistants and I administered the survey to 575⁹ city-based waste collectors. The nine urban districts of Hanoi were subdivided into ‘peri-urban’¹⁰ (new) and ‘core’¹¹ (old) and I selected all four ‘core’ urban districts and randomly selected two of the five ‘peri-urban’ urban districts.¹² My rationale for selecting all four of the core urban districts was because I wanted to be able to make direct comparisons to a study that had been undertaken in these districts in 1992 (DiGregorio, 1994). The second part of multi-stage sampling took place within each district. I sub-divided each district into quarter kilometre square area blocks and mapped this ‘grid’ onto large maps of each district.¹³ Because of the variation in size of each of the six districts, I used probability proportionate to size sampling (giving larger districts a greater probability of selection and smaller districts a lower probability) and randomly selected 10% of the area blocks in each district, or 77 area blocks in total. Prior to the start of the survey, my research assistants and I spot-checked each area block to ensure that it was accessible. If for some reason the area block could not be accessed (i.e. under construction or barricaded government property), we randomly selected a new area block in the same district.

Once in the designated area block, my team employed a two-stage systematic sampling technique, whereby we started our survey with the second waste collector observed, and then interviewed every second subsequent waste collector. We surveyed in each area block for three hours, with half the area blocks surveyed in the morning and the other half in the evening. This was done because waste pickers tend to work in the evening (preferring to wait until the day’s waste had been discarded before they start picking)

⁸ The first training session consisted of a one-day in-office session to explain the objectives of the research, clearly define the characteristics of the target population, and explain proper survey protocol. Following this training, I held an ‘in-the-field’ training, which also doubled as a second pre-test of the survey. Research assistants were asked to conduct surveys while one of the supervisors observed them. Following three days of observation and training, the supervisors ranked each of the research assistants and we placed them in specific groups of two based on each person’s strengths and weaknesses. Supervisors were given the responsibility to conduct periodic ‘spot-checks’ on research assistants throughout the survey and to report on the quality of work; research assistants who had difficulties conducting surveys received additional support and guidance from the supervisors throughout the data collection period. Halfway through the surveys I also held a follow-up training session. At this point, research assistants were given additional training on soliciting sensitive information, avoiding bias during the surveys and during translation, and how to ask appropriate follow-up questions if respondents answered in a vague manner. We also used role-playing exercises to show how research assistants should deal with difficult respondents.

⁹ This figure includes 19 surveys that were not fully completed, but which were nonetheless included in the analysis.

¹⁰ Tay Ho, Thanh Xuan, Hoang Mai, Cau Giay, Long Bien.

¹¹ Hoan Kiem, Ba Dinh, Dong Da, Hai Ba Trung.

¹² Randomly selected were: Thanh Xuan and Cau Giay.

¹³ The total number of area blocks in all six districts was 778, ranging from 61 in Hoan Kiem, the smallest district to 180 in Cau Giay, the largest district.

⁵ It should be noted that the term “integration” varies depending on the particular biases and agendas of its users. For a detailed discussion of various interpretations of this word see Furedy (1997).

⁶ Additionally, van Horen (2004) discusses the impact of urban development and the fragmentation of urban services in relation to the formal waste management system in Colombo, Sri Lanka.

⁷ I have an intermediate proficiency in Vietnamese.

and junk buyers tend to work during the day (because they buy from businesses and households). At the same time, we also did an overall count of the total number of waste collectors observed in each area block, which became the basis for estimating the city-wide population.

For 3 weeks in October 2006, we followed up with 44 structured qualitative interviews, interviewing people in areas of the city that were not randomly selected for the survey. The purpose of the interviews was threefold: (1) they allowed me the opportunity to ask more detailed questions and to obtain in-depth answers; (2) they served as a way to ‘triangulate’ the data obtained from the surveys; and, (3) they gave me the chance to follow-up on questions I had from a preliminary analysis of the surveys. In both the surveys and the interviews, I asked respondents about basic demographic information (age, gender, hometown, etc.) along with more detailed questions about the types and quantity of waste collected; price fluctuations of waste materials; their work environment (including where they work and why, transportation routes, problems encountered, etc.); and changes they have noticed in the city and in the type(s) and quantity of waste collected. However, before delving into the detailed results of this survey and the subsequent interviews, I would first like to discuss the rural roots of informal waste collecting in Hanoi.

4. Rural roots, urban future?

4.1. *The rural roots of Hanoi’s informal waste collectors*

In order to understand waste recycling in Hanoi, we must first explore the political economy of rural Vietnam. The majority of waste collectors (75% in 2006) operating in Hanoi hail from Xuan Truong district in Nam Dinh province (formally known as Nam Ha province), located in the Red River Delta region of Vietnam. At first glance, this occupational choice may seem rather obscure. How did rural farmers (many of them women) from Nam Dinh province find themselves in Hanoi’s informal waste trade? To understand the answer to this question, one must explore the social and economic factors unique to Xuan Truong district and the political shifts that occurred in rural Vietnam more generally. DiGregorio (1994, 1997), DiGregorio et al. (1998), and Douglass et al. (2002) explain that the catalyst for the formation of this occupation, which later became a village specialization, can be linked to four factors – social networks, population pressures, lack of secondary off-farm employment opportunities, and shifts in post-independence agricultural policies.

The social networks which link Xuan Truong to waste recycling in Hanoi can be traced back over 70 years to one man – Mr. Nam Diem. After he was hired to organize a French-owned sanitation company operating in Hanoi in the 1930s, word travelled back to Nam Dinh province that there were employment opportunities in Hanoi, collecting night soil from public and private latrines throughout the city. As parents worked collecting night soil, their children scavenged for recyclable materials at the landfill and within the city. Some of these children eventually moved into the city and set up waste receiver shops (primarily in O Cho Dua ward in Dong Da district). These children became some of the first waste collectors and waste intermediaries operating in Hanoi. Today, four out of five waste collectors in Hanoi will tell you that they entered into the waste business through friends and/or relatives; just under half of waste intermediaries were once informal waste collectors (more specifically, junk buyers) prior to opening their own shops.¹⁴

¹⁴ This figure is based on a random sample of 264 waste intermediaries located throughout Hanoi.

In the second half of the century, increasing population pressure and a lack of secondary off-farm jobs in the district acted as a catalyst for Xuan Truong residents to adopt waste recycling as a village specialization. The Red River delta is the most densely settled geographic region in Vietnam, with an average population density of just over 1000 persons per square kilometre, and Xuan Truong district is amongst the most densely settled rural districts in this region (Douglass et al., 2002). While most rural residents in Vietnam depend on agriculture for at least part of their income¹⁵, residents in Xuan Truong district have found it particularly difficult to survive on wet rice agriculture alone, due to the region’s high population density relative to available agricultural land (Douglass et al., 2002).

Furthermore, unlike other districts in the province (or other provinces in the Red River Delta), Xuan Truong residents had no traditional “handicraft trades”, or locally based small-scale businesses which served to economically cushion the community during the farming off-season, or during years of poor crop yields. While residents in neighbouring Giao Thuy district, for example, were able to depend on income from fishing, residents in landlocked Xuan Truong district had no such alternative. DiGregorio et al. (1998) argues that this is because of the district’s late incorporation into Vietnam’s rice growing peasant economy. This resulted in the district “having large amounts of communal land relative to other areas in the delta” (27). This geographical feature, when merged with the politics of post-independence socialism, created a local economy “heavily dependent on cooperative agriculture and industries” (Douglass et al., 2002). Unable to survive on the outputs of their cooperative units, and without alternative income sources, many Xuan Truong residents found employment outside their district. Hanoi was a favoured locale, primarily because of its close geographic proximity to Xuan Truong, and because of the availability of jobs and their relatively high pay.

As the narrative above highlights, the presence of Xuan Truong waste collectors, which represent most of the informal waste collectors operating in Hanoi, has occurred due to a unique mix of processes – including social (resulting from Mr. Diem’s introduction of Xuan Truong residents to Hanoi’s urban waste infrastructure and informal opportunities in the waste trade); geographical (with respect to the rather inopportune physical geography of Xuan Truong district); economic (regarding the need of Xuan Truong residents to find off-farm employment because of a lack of secondary jobs and the high population density of the region); and political (through the formation of cooperatives under post-independence socialism and the resulting need for alternative sources of income). Similarly, the political economy of waste collectors operating in urban Hanoi consists of multiple processes of change. In the following section I will explore how these multiple processes of change (including economic, political, and social) have, (1) caused the waste collector population in Hanoi to surge in recent years (creating a host of issues as a result); and (2) produced an increasingly gendered waste-economy in Hanoi.

4.2. *Informal waste collecting in the urban context*

I will begin this discussion ‘on the ground’, exploring the mechanics of waste collecting – method of transportation, route of work, and quantity and composition of waste collected. Understanding the modifications waste collectors have made to their work procedure, and their rationale for these alterations, gives us significant insight into how changes occurring in the city, and regionally, nationally, and internationally, impact their work. Fol-

¹⁵ According to Douglass et al. (2002), roughly 85% of households in the Red River Delta depend on agriculture for at least part of their household income (1–22).

lowing this introduction, I will explore the demographic shifts that have occurred in the waste collector population; examine the trend in Hanoi towards a more gendered waste collector population, and the subsequent gendering of the work itself; and finally, discuss city-based politics of exclusion.

Throughout this discussion I will use, when available, figures from earlier work conducted with this same population in 1992 (DiGregorio, 1994). My aim in using this data is to show change over time. While it should be noted that these surveys are not identical in their methodologies¹⁶ they nevertheless provide a good comparison between characteristics of waste collectors over a 14-year period of significant socio-economic change in Vietnam.

4.2.1. Changing mechanics of waste collecting

In the early 1990s waste collectors made their way through the city primarily by foot. Junk buyers were best recognized by their shoulder poles and hanging baskets; waste pickers by their iron hooks or bamboo tongs (DiGregorio, 1994). While, on average, about a third of waste collectors rode bicycles or cargo bikes, 31.5% of waste pickers and 39% of itinerant junk buyers walked their daily route (DiGregorio, 1994). This worked well in a relatively small city where informal waste collectors often chose a familiar route to collect waste in and repeatedly returned to common customers. However, in 2006 while some waste collectors still report travelling by foot, the ratio of walking to biking had changed dramatically (see Table 1).

There are a number of likely factors for this shift in means of mobility. First, owning a bicycle is more economically feasible for a vast number of people now, including rural migrants. Also, for people that pick and/or buy heavy or cumbersome loads of waste, the bicycle is a much more convenient way to haul materials to waste intermediaries. Another important factor in this change is the fact that as the city expands outward into previously rural areas, and competition increases for waste sources in the central city, some waste collectors need to travel farther in search of waste materials. As one waste collector reports: “I expand my route because I can’t find enough waste in the same places. Sometimes I have to travel as far as 20 km to find waste” (Survey Respondent # 76). The shift towards the use of bicycles may partially explain the drastic change in the number of kilograms the two different occupational groups collect each day. Table 2 details the quantity of waste collected by waste collectors in 1992 and 2006. Similar to the data collected in 1992, there is no significant difference in kilograms collected by gender (women are collecting, on average, 39 kg of waste/day whereas men collect 33.5 kg/day). However, the difference in kilograms collected between waste pickers and junk buyers is statistically significant ($t = -4.392, p = .037$).

A decrease in the amount of waste that junk buyers collect cannot be entirely explained by their reluctance to cycle. Many junk buyers reported that there were just too many people buying waste in Hanoi. In fact, of the 46% of waste collectors who reported that this job is more difficult now compared to when they started, 42% of them told us it was primarily because they believe that there are too many waste collectors in the city. Junk buyers especially felt that it was now more difficult to earn a living with one of every two reporting this opinion, compared to only one of every three waste pickers. Conversely, 45.5% of waste pickers reported that the job was now easier compared to when they started, while only 29% of junk buyers felt this way.

This point is also reflected in the incomes of waste pickers and junk buyers. While in 1992 the ratio of waste picker to junk buyer income was 0.85:1, in 2006 it was 0.94:1. A waste picker earns an

Table 1

Percentage of respondents who rode bikes, by occupation and gender

Bike or cargo bike	Female waste picker (WP) (%)	Female junk buyer (JB) (%)	Male waste picker (WP) (%)	Male junk buyer (JB) (%)
1992 ^a	11.6	15.5	58.9	100
2006 ^b	83.8	49.4	100 ^c	100

^a Figures for 1992 data in this table and in other tables in this paper are derived from a sample of 82 waste pickers (43 women and 39 men) and 64 junk buyers (45 women and 19 men) (DiGregorio, 1994).

^b Figures for 2006 data in this table and in other tables in this paper are derived from a sample of 91 waste pickers (80 women and 11 men) and 476 junk buyers (449 women and 25 men).

^c There are a small number of male waste pickers who walk (personal observation), but our random survey did not capture this group.

Table 2

Kilograms collected per day, by occupation

Occupational group	1992 (kg/day)	2006 (kg/day)
Waste pickers	13.0	24.2
Junk buyers	63.5	40.8

average of 29,890 VND/day (1.87 USD) and a junk buyer earns 31,650 VND/day (1.98 USD).¹⁷ On average, waste pickers work significantly longer than junk buyers (8.9 and 8.1 h, respectively, $t = 2.801, p = .000$) in 2006.¹⁸ Thus, when we calculate the ratio between hourly earnings of waste pickers and junk buyers we find that waste picking is still less profitable (0.84:1, or about 3,358 VND/h (.21 cents/hour) for a waste picker compared to 3922 VND/h (.25 cents/hour) for junk buyers overall. However, this should not negate the fact that survey data reveals some waste pickers *feel* better off, compared to when they started picking, as well as compared to junk buyers overall. As mentioned previously, 45.5% of waste pickers reported that their job was now easier compared to when they started, compared to only 29% of junk buyers. This feeling of improvement can be attributed to both the quantity of materials collected and their fluctuating values; when the price of waste increases waste pickers pocket this increase because the waste they sell is ‘found material’, whereas junk buyers must pass part of the profit back to their sellers. The most common answer waste pickers gave for why their job was easier now compared to when they started was “the price of waste materials had increased”. On the other hand, the most common answer for junk buyers was that they are now “more familiar with the job”. Furthermore, if the price of waste suddenly drops, junk buyers may lose out if they had bought the material from their sellers at a high price, whereas waste pickers have no investment (other than their time) to lose. Increasing fluctuations in the price of waste materials is an important point, and I will return to it again in more detail later in this discussion, but first I want to provide an explanation for the growing population of informal waste collectors in Hanoi.

4.2.2. Changing population demographics

The increase in informal waste collectors in the city can be explained by a number of factors, both rural and urban in origin. The expansion of the waste business in Hanoi has been affected by major political changes in the 1980s. *Doi Moi*, as mentioned earlier, was a package of reforms implemented in 1986 which opened the Vietnamese economy to international capital, introduced elements of a market economy, and greatly reduced the central control of the state (Drakakis-Smith and Dixon, 1997). Yet *Doi Moi* was not simply a package of new economic policies; rather,

¹⁶ DiGregorio employs a non-probability sampling procedure whereas I utilize a probability sampling method.

¹⁷ All currency conversions in this paper have been done at a rate of 16,000 VND to 1 USD.

¹⁸ There is no comparable data for 1992.

it represented a fundamental political and social shift for the country. This shift was felt strongly in rural Vietnam. While social discontent over the failing cooperative system was already building amongst rural families and acts of resistance were swelling prior to the introduction of *Doi Moi*, the result of these political changes was a wholesale shift in state-formed agricultural policies in the 1980s and 90s. Rural residents were no longer tied (economically or socially) to cooperative units, and by the 1990s farmers were legally entitled to “sell up and leave, temporarily or for good” (Hardy, 2003, p. 124). Concurrently, economic policies, which now offered low returns from the production of rice, combined with decollectivization acted as a catalyst for rural-urban migration.

Strong fiscal pressure and weak profits came together to favorise rural migration and the informal economy. Three forms of behaviour emerged. Either peasants moved towards production which paid, and fed the urban markets by transporting goods on shoulder poles, or they left the countryside and went to join the cohorts of day-labourers working in the cities... or they turned directly to the informal economy (Papin, 1999, p. 157 quoted in Hardy, 2003, p. 124).

While decollectivization of agriculture and loosening of the household registration system gave rural residents more mobility, the dismantling of the cooperative agricultural system had negative impacts on social services, particularly education. Although social services were generally under-funded in the collective era, they were nonetheless freely accessible to cooperative members (Henin, 2002). Since the introduction of *Doi Moi*, individuals are now faced with the financial burden of paying for services, including education. Many of the waste collectors we spoke with in Hanoi highlighted this problem as one of their reasons for working in Hanoi. Twenty-one percent of the respondents who told us they were not planning to do this job permanently ($n = 167$) said that they would only continue in this job long enough to pay for their children's education. While this figure does not represent an overwhelming percentage of informal waste collectors, 99% of people told us they save at least some of their monthly earnings to send to their rural-based families or for their families in Hanoi. Informal waste collectors use at least part of these savings to finance their children's tuition fees and other school expenses for their children (DiGregorio, 1997).

In addition to these major shifts in rural political, economic, and social policy, rapid economic expansion and the ensuing urban development of Hanoi have drawn even more waste collectors to the city. Because of informal waste collectors' mobility it is difficult to estimate accurately their total population in Hanoi, or any other city for that matter. This is due primarily to the itinerant nature of waste collecting and seasonal fluctuations in population, resulting from their commitments on family farms. In 1992 DiGregorio (1994) employed a random-block population census to estimate the total population of informal waste collectors in the city, comprised of the four central districts,¹⁹ to be approximately 4800–6000. In 2006, using a similar enumeration method, I estimated the population of informal waste collectors in the same four central districts to be 8200 people.²⁰ In the last decade the city of Hanoi has grown substantially, and five new urban districts have been added.²¹

¹⁹ Central districts included: Hoan Kiem, Hai Ba Trung, Dong Da, and Ba Dinh.

²⁰ In fact, the figure could be higher given that we counted waste collectors at the same time as interviewing, which likely resulted in an underestimation of the population. Moreover, the survey was conducted in June, when many informal waste collectors had returned to their rural villages to help with seasonal farm activities. As such, this figure is a conservative estimate of the total number of waste collectors working in Hanoi.

²¹ New urban districts include: Cau Giay, Thanh Xuan, Hoang Mai, Ho Tay, and Long Bien.

Given this addition, the total population of waste collectors in all nine districts in Hanoi is estimated at approximately 22,500.²² In addition to this population, we should not forget to include the ‘upper tiers’ of the waste-recovery hierarchy, including approximately 1700 waste intermediaries (including city-based sidewalk depot operators and fixed-location waste receivers)²³ and an unknown number of waste dealers.

Waste collectors tell us their reasons for coming to Hanoi (rather than to other nearby towns or cities) are twofold: (1) family connections in the business, which help establish contacts (with both sellers and buyers) and aids immensely with logistical issues of finding suitable accommodation and negotiating new areas of the city; and (2) the quantity and composition of waste in Hanoi. As one junk buyer explains:

I came to Hanoi to work because there is more waste to buy here, compared to my hometown. In my hometown we can't buy as much iron, because there are fewer houses being built in the countryside. Moreover, the living standards are higher in Hanoi compared to my hometown. The people in Hanoi consume more goods, and as a result, I can buy more waste here (Interview 3, Hoan Kiem District, October 16th, 2006).

4.2.3. Gendering of waste work in Hanoi

While there are more waste collectors in the city, the tandem increase in the general population and the move towards a more ‘throw-away’ consumer society should be creating a windfall for informal waste collectors – more garbage and thus more money. However, as the figures in Table 2 suggests, this has not necessarily been the case. While waste pickers are collecting more now than they were 14 years ago, junk buyers appear to be collecting less. Furthermore, female waste collectors in general, and female junk buyers in particular, have fared less well than their male counterparts overall. Men and women work, on average, the same amount of time (8.4 and 8.2 h/day, respectively, $t = -.487$, $p = .274$), but men earn 39% more (49,220 VND compared to 30,040 VND, $t = -4.523$, $p = .000$). In other words, for every 100 dollars a man makes, a woman will make 61 dollars. This ratio has changed drastically from the early 1990s, when women earned 89% of their male counterparts' salary (DiGregorio, 1994).

This declining income ratio can be explained by two interrelated factors: (1) the declining number of ‘average-earning’ men in the industry; and (2) the type of waste men specialize in. It is also possible that men are simply less visible on the streets, given that some of them are now riding motorcycles to buy waste.²⁴ DiGregorio (1994) estimated the male population of waste collectors at 41.6% of the total population. In 2006, the male population was only 6.5% of the total population. Table 3 details this change.

The decline in average-earning male waste collectors generally, and male waste pickers in particular can be attributed to the growth of the urban economy and availability of new gendered occupations. Men have moved out of the waste business into other

²² To extrapolate to the remaining three peri-urban districts not included in the study, I calculated the average ratio of waste collectors to population in Cau Giay and Thanh Xuan (.16:1), using the population figures from the Hanoi Statistical Yearbook (2006). Using the ration of .16:1, I determined that the remaining three peri-urban districts would have a total waste collector population of 8499 (Tay Ho: 1703; Long Bien: 2976; Hoang Mai: 3820).

²³ The population of waste intermediaries was also calculated using a random-block approach and extrapolated to the remainder of the city using the same method as discussed in the previous footnote.

²⁴ While we included a category in our question regarding transportation method for men riding motorcycles, in practice it was impossible for us to interview them, given the fact that the research team travelled by foot. As a result, the survey results may be skewed towards a higher female population. However, our time spent at waste receiver shops leads us to believe that the total percentage of male waste collectors riding motorcycles is still rather low.

Table 3
Gender of waste collector occupational categories in 1992 and 2006

	Female waste pickers (%)	Male waste pickers (%)	Female junk buyers (%)	Male junk buyers (%)
1992	29	26	29	16
2006	14	2	79	5

occupations, which have flourished in Vietnam's new economy. Yesterday's waste picker is today's *xe om* (motorbike taxi driver), or construction labourer. Some men have also gone on to open their own waste intermediary shops, often working with their wives and their families in Hanoi.

As female junk buyers explain, the reason why men have moved to other occupations has much to do with socially constructed conceptions of gender and work. "There are more construction sites now and men take these jobs; men think working with waste is not suitable for them" (Interview 2, Thanh Xuan District, October 21, 2006); "Men stay in their hometown and farm while their wives come to Hanoi to work; men do not want to do unimportant work like cleaning floors and buying junk" (Interview 3, Cau Giay District, October 27, 2006). This gender divide in labour is not a recent phenomenon. Women have historically played an important economic role in the family, generating much of the household income through commerce, handicraft production and agriculture. A Chinese trader to Hanoi in 1688 remarked: "Trade was the domain of women. Even the wives of high-ranking mandarins were not concerned about losing face (through their trading activities)" (Thanh The Vy, 1961, p. 91 quoted in Luong, 2003, p. 202).

More recently, the two overlapping constructions of gender in Vietnam, Confucian and Socialist,²⁵ have demanded very high standards from women. "Women are expected to work diligently to better themselves and their families, and to always put their family's (and often the nation's) interests ahead of their own" (Schuler et al., 2006). Moreover, as Resurreccion and Khanh state: "gender and power relations within the household, as well as wider socio-cultural expectations of women and men, structure the patterns of household labour allocation, entitlements to resources and, consequently, migration" (2007, p. 213). Thus, the gender imbalance in informal waste collecting is also related to women's desire, and social responsibility, to better themselves and their families, as well as household-level decisions regarding gendered labour allocation. In other words, women are still willing to engage in the low-status work of waste collecting because (a) they do not have access to higher paying jobs in Hanoi, which many male migrants now have the ability to attain; and, (b) because they are willing to sacrifice 'face' to support their family, ensuring a more promising future for their children. This phenomenon was captured in our discussions with female waste collectors, and simultaneously sheds light on the decline of child waste collectors in Hanoi.

²⁵ According to Schuler et al. (2006) "Confucian history assigned women the values of hard work, chastity and proper behaviour, and focused on women's role as daughters, mothers and wives. According to the Confucian moral code of the 'three obediences', a woman must show obedience to father before marriage, to husband when married and to the eldest son when widowed. Post-1946 Socialist Vietnam brought about a kind of social emancipation for women; 'women's liberation' and participation in social and political life were important elements in the anti-colonial movement, even though the traditional Confucian role of women as caregivers was still very much emphasized. After liberation, women's equal rights with men in both the public and private domains were legally recognized... Despite the country's highly evolved institutional and policy framework for the promotion of women's interests, a variety of evidence, including findings from our own research, suggests that women at the grassroots level continue to face a range of health, economic and social problems" (384–386).

Table 4
Significant *t*-tests for gendered differences in type of waste collected (2006)

Type of material	Gender	Avg. collected (kg/day)	<i>t</i> -Values	<i>p</i> -Values
Paper and carton	Women	4.12	2.201	.032
	Men	2.11		
Glass	Women	3.37	2.855	.006
	Men	.97		
Styrofoam	Women	.31	2.723	.007
	Men	.08		
Electronics	Women	.013	-2.689	.013
	Men	4.52 ^a		

^a Given the difficulty to estimate the actual kilograms of electronic waste collected (often bought by piece, not kilogram), the mean kilograms collected/day could in fact be even higher.

In the past, people in the countryside didn't have money. They were too poor, so they had to let their children work as waste pickers in Hanoi. Now, all kinds of wastes can be sold and the adults working (as waste collectors) can earn more. Therefore, they let their children go to school (Interview 10, Hoan Kiem District, October 23, 2006).

As for men who have stayed in the waste business, they have, for the most part, tended to specialize in one or two types of waste. This trend to specialize is not new. DiGregorio (1994, p. 183) reports that in 1992, 42% of junkmen specialized in a particular type of waste, compared to only 6.5% of junkwomen. Men's specialization in waste, particularly household electronic waste, elevates their work to more of a craft; women's lack of specialization is akin to the domestic work that they carry out in the home, whereby they pick up a miscellany of matters with little ascribed value. Fourteen years later this gendered division in specialization remains; women continued to collect a miscellany of materials and collect, on average, more waste than men (39 kg/day and 33.5 kg per/day, respectively), yet they have fallen even further behind men in terms of how much income they earn from this occupation. Why is this?

While we asked about amounts collected for a number of materials (including: carton, paper, plastic, metals, Styrofoam, household electronics, organic waste, plastic bags, glass, cement bags and rubber), statistical tests confirmed only four statistically significant relationships between amounts of material collected and gender. Women were more likely to collect paper and carton, glass and Styrofoam; men, on the other hand, specialize in collecting old electronic equipment and household appliances. Table 4 illustrates the gendered specialization of waste materials.

Some of this electronic/appliance waste is repaired and sold to speciality shops. As one electronics buyer reported: "Many households use electronics goods made in China, which break down quickly. As a result, I can buy more waste" (Survey Respondent # 411). Another electronics buyer speaks to Hanoi's increasing consumer society: "It's easier to buy electronics from households now because they are often updating their old appliances and electronics with newer models" (Survey Respondent #297). While electronics/appliance buyers can make good money from repairing old equipment, some electronics buyers also find it lucrative to strip the product for its parts and sell the copper, gold and other precious metals found inside.

The practice of stripping has become even more lucrative with an increasingly open Vietnamese economy. Demand from regional markets, particularly China, has caused the price of 'in demand' recyclable materials to increase substantially (Pollack and Bradsher, 2004; Yam, 2005; China Daily, 2006; Recycling International, 2007). Recycled copper, used in the production of cable, wire and electrical products and in the construction industry (for pipes for plumbing, heating and ventilating and for building wire and sheet metal facings) (London Metals Exchange, 2007), has become

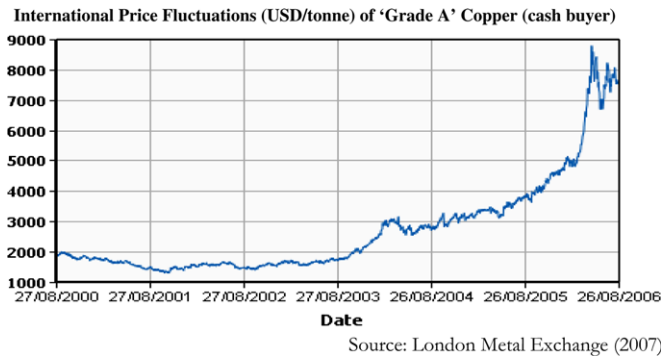


Fig. 1. International price fluctuations(USD/tonne) of 'Grade A' copper (cash buyer).

especially lucrative as it accounts for “approximately 40% of the raw material input of refined copper production and consumption worldwide” (Environment Canada, 2007).²⁶ Fig. 1 illustrates changes in the price of copper over a 6-year period from 2005 to 2007.

Recycled copper is one of the most profitable (and most volatile) materials traded in Vietnam. Table 5 charts the price fluctuations of copper and other commonly traded waste materials in Vietnam over a period of 6 months in 2006–2007.

A casual observer will notice junk buyers on Hanoi's street corners stripping old wiring for the valuable copper inside during mid-afternoon breaks; at waste intermediary shops, owners deftly strip off the plastic casing with sharp knives while waiting for customers. Copper is big business in Hanoi's waste trade.²⁷ While women are collecting from construction sites more than their male counterparts (51% and 22% of respondents, respectively) men are able to buy directly from institutions liquidating old office equipment (31% of men report doing so, compared to only 16% of women) and households selling old appliances and electronic items.

This begs the question as to why women are not also specializing in particular wastes, especially the currently lucrative household electronic/appliance waste? The answer to this question lies, again, in informal waste collectors' gendered notions of work. When asked why they think men specialize in household electronics and women do not, male and female junk buyers alike attributed it to particular gender characteristics, such as knowledge, strength, or the belief that electronics buying is simply 'men's work'. Of the 11 respondents who answered this question in the interviews, over half (seven respondents) suggested that men simply had the knowledge to do this work, whereas women did not. Both men and women had similar responses: “Men are good at (breaking down) household electronics. They know what can be reused and repaired; women do not understand about these things” (Interview 1 (female junk buyer), Thanh Xuan District, October 21st, 2006). The remaining respondents attributed the gender

²⁶ In Italy, 'copper thieves' have been pillaging trains, bridges, and construction sites in search of the “red gold” (Simpson, 2006). In Vung Tau, Vietnam soldiers and fisherman had been given permission to salvage unused undersea cables, which were laid before 1975, to sell as scrap. However, this permission has recently been revoked after scavengers in search of copper stole parts of active undersea cables, which provides 80% of Vietnam's internet access, crippling communications in the country (Williams, 2007).

²⁷ While the financial benefits of stripping electronic waste for its parts are clear, the long-term health risks are anything but transparent. Pellow (2006) lists the multitude of health risk that are associated with handling this toxic waste (which can contain such chemicals as lead, beryllium, mercury, cadmium, hexavalent chromium, and brominated-flame retardants), including: damage to the central and peripheral nervous systems, blood stream and kidneys (231). While a detailed health assessment of informal waste collectors was beyond the scope of this research, we should not forget this important and under-researched environmental injustice intimately associated with the informal waste-recovery industry.

imbalance in collecting household electronics to reasons such as men have more physical strength to lift heavy objects, men prefer to collect this type of waste material, or simply that this is 'just the way it is'. “Men mainly buy household electronics/appliances because the profit from these items is higher than if they were to only pick waste; men are strong enough to carry these things” (Interview 3 (female junk buyer), Dong Da District, October 9, 2006). “That's the way it is. Everyone has their job – men's job is to buy electronic equipment and women's job is to buy the rest of the junk” (Interview 2 (male junk buyer), Hoan Kiem District, October 16, 2006).

To compensate for lower overall incomes, women employ a number of strategies. First, they tend to be on average better savers. In fact, women save 72% of their income compared to an average of only 55% for men. Women also tend to minimize their daily expenses. While men will spend 45% of their daily income on expenses, women use only 28%. Table 6 highlights these gender differences.

In addition, women are much more likely to take second jobs. In fact, 66% of the women surveyed reported having a second job, compared to only 22% of men. The most common job they took was part-time work as a maid in a household or an office building. This second job provides them with the benefit of earning extra money and, at the same time, allows them to develop personal relationships with people who could potentially sell (or give) them waste.

The reluctance of women to enter into buying electronic/appliance waste is not only due to their own preconceived notions of gendered work in the waste trade, but also related to the difficulty they face from sellers (usually households) when they attempt to buy electronic waste. “Customers who have electronics/appliances prefer selling to men. Once I cried and begged the seller to let me buy the appliances, but the seller said that they only sell (this type of waste) to men” (Interview 2, Dong Da District, October 13th, 2006). Yet, customers' attitudes (and the public's more generally) also extend beyond simply dictating who should buy what. An air of contempt and disrespect for this occupation permeates most interactions with waste collectors. More than one third (36%) of all informal waste collectors reported problems with contempt, when we asked them an open-ended question about what, if any, problems they encountered throughout their workday.²⁸ Despite problems with customers, it is actually female waste pickers (who scavenge for waste, rather than buy it) who experience the most contempt. In fact, 53% of female waste pickers reported problems with contempt, compared to 34% of female junk buyers (chi-squared = .006).²⁹ Here we can see the politics of gender and the politics of scavenging merge to create a situation in which some waste collectors find themselves more excluded than others.

4.2.4. City-based politics of exclusion

This disregard (for waste collectors generally, and women and waste pickers more specifically) is compounded by the politics of the city of Hanoi and Hanoi's municipal waste management authority – URENCO. While Hanoi authorities have not permanently expelled waste collectors from central Hanoi, they do exercise, on occasion, their power to do so. Decision No. 63, enacted in 2003 by the People's Committee of Hanoi, regulates the use of pavements in the city. People cannot use the pavement to buy or

²⁸ Waste collectors defined their experience of contempt as both direct and indirect: they experienced contempt directly through being evicted from public spaces and customers shouting at them; they experienced contempt indirectly through public scorn and when they had to argue excessively with households because customers refused to accept the price offered for waste materials.

²⁹ Unfortunately, a comparison between male junk buyers and waste pickers is not possible because of the low male response rate.

Table 5
Price fluctuations of waste materials over six-month period (price (US\$) per kilogram)^a

Material types	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Change over 6 months (%)
Steel	.21	.22	.22	.22	.27	.27	29
Scrap iron	.21	.22	.22	.22	.29	.27	38
Aluminium cans	.12	.15	.15	.15	.15	.16	33
Carton	.09	.08	.08	.08	.09	.08	13
Plastic bottles	.37	.37	.38	.38	.41	.44	19
Copper	6.25	5.94	4.69	4.84	5.63	6.56	40
Yellow copper ^b	3.75	2.97	2.50	2.50	3.59	4.38	75

^a The prices of the individual waste materials listed here were provided by a receiver working in Cau Giay district.

^b Yellow copper is the colloquial name for different types of minerals and alloys with a high copper content.

Table 6
Waste collectors' average income, expenses, and savings, by gender (2006)

Gender	Average income/month	Average living expenses/month	Average savings/month ^a	Percentage income saved/month (%)
Women	\$57.34	\$20.74	\$41.02	72
Men	\$93.94	\$41.18	\$51.30	55

^a Average income minus average expenses does not exactly equal average savings because these averages are taken from separate self-disclosed reports of income/savings/expenses. Additionally, average savings for women may also include money earned from part-time work as a maid.

sell on the street, or to put goods, materials or waste on the ground. This law is often enforced on vegetable sellers, restaurant owners who expand their seating areas beyond their private shops, and individuals who set up small restaurants every day on city sidewalks, but a few junk buyers have also reported having their pole and baskets confiscated.³⁰ During special events, waste collectors also describe being asked to leave central areas of the city, such as Hoan Kiem and Hai Ba Trung district. "A few years ago there were some conferences in Vietnam and the police prevented us from collecting waste for several days. I wanted to collect waste so I went anyway, but the police caught me and took me to the police station. I got caught picking waste twice during this time and both times I had to pay 15,000 VND" (.94 USD) (Survey Respondent # 533, Hoan Kiem District); "During the Southeast Asian Games the government prevented us from collecting waste in the old streets of Hanoi. I decided to go anyway and the police caught me. They confiscated my bamboo shoulder pole, but returned it to me later and I didn't have to pay a fine" (Survey Respondent #540, Hoan Kiem District). While this type of expulsion of waste collectors has yet to occur *en masse*, the fact that the Government could exercise this power at will leaves informal waste collectors in a precarious position – a job that is quasi-legal and its future existence very much dependent on the political whims of the city.

Indirect exclusion of informal waste collectors by URENCO, Hanoi's formal waste collection organization, has also played a role in minimizing their status.

While aware of the benefits to both urban and rural communities accruing from recycling, URENCO does not include statistics on private recycling in either its reports or planning. The unintended consequence of this omission is an overstatement of the waste management problem that, at the same time, relegates private sector recycling to the periph-

³⁰ While waste pickers did not report similar problems when we asked them the open-ended question about problems experienced on the job, any bans on junk buyers would also impact waste pickers. In fact, bans during national events usually evict all 'undesirables', including beggars and other people who earn their living on the street.

ery of the state's development agenda (DiGregorio, 1997, p. 6).

However, as DiGregorio (1997) also aptly notes, if city authorities were to suddenly discover the wealth to be had in recycling, they might attempt to monopolize the resource, which would most likely negatively impact waste-recovery actors throughout the hierarchy. In fact, as of 2007, this is beginning to become a reality in Hanoi. In 2007, URENCO began piloting a scheme whereby households are asked to separate their wastes into recyclables, organics and residuals. In some selected areas, URENCO collection workers are now collecting and storing recyclable materials themselves, which are subsequently sold directly to a waste intermediary at the end of each month. The implications of this scheme for waste collectors are obviously negative and, if the scheme gets rolled out across the city, could be economically devastating as it would seriously hinder waste collectors' ability to earn an income.³¹ Thus, paradoxically, up until very recently URENCO's (and the City government's) disregard for informal waste collectors, in effect has allowed them to continue operating.

5. Summary and final thoughts

As I mentioned at the start of this paper, the livelihoods of informal waste collectors are forged through various processes of change occurring at multiple geographic and economic scales. As DiGregorio (1994, 1997) and Douglass et al. (2002) have established, informal waste collecting in Vietnam has very deep rural roots. I argue that this informal trade has persisted, and even expanded, in recent decades due to interconnected processes of change, both in urban Hanoi and in rural Vietnam. National level political shifts in rural agricultural policies, implemented (formally) by *Doi Moi* reforms acted as a catalyst for the growth of the industry in the 1990s, but these rural-based reforms alone do not explain the increasing waste collector population. Massive urban development in Hanoi, also an outcome of *Doi Moi*, and Vietnam's subsequent re-engagement with regional and global markets, has created wealth in the city and an increasingly affluent consumer society, which is now buying more products and producing more waste than at any other time in the city's history. Informal waste collectors have benefited directly from increasing urban wealth, and city residents' ensuing waste. They have also, oddly enough, benefited indirectly from negative social views of their occupation, in that the City of Hanoi has, until very recently, ignored their contribution to waste diversion and for the most part tolerated their presence in the city.

The livelihoods of informal waste collectors as a collective are changing, and so too are the internal dynamics of the occupation. Urban expansion has enlarged some waste collectors' routes, and

³¹ Because this scheme was implemented after completing my fieldwork, the effects are not captured in my data.

the increasing population, noted in the preceding paragraph, has altered the quantity of waste collected for some. Moreover, fluctuating prices for waste material has, ironically enough, allowed waste pickers, typically thought to be the worst position in the already low-status work of waste collecting, some economic comfort. Their ability to garner the full price for increasingly valuable waste, while their junk-buying counterparts must pass some of the profit back to their customers, has given waste pickers a slight edge (even if it is only perceived) in the difficult business of waste collecting. However, the most notable (and most surprising) change in the internal dynamics of this work is the gendering of the waste collector population and the increasing divergence between male and female incomes. I contend that the gendering of the waste collector population is due in large part to the exodus of average-earning men from the waste collector population. Men who would have been earning average incomes in the waste-recovery trade have left for other work, which they believe is more suitable to their masculine characteristics. As noted earlier, the population of waste collectors has increased. The increasing population has been primarily women of rural origin in search of flexible work that affords them the freedom to return to their rural-based families throughout the year. The fact that this work is not socially valued does not escape their attention. But unlike men, who have access to a greater number of gendered occupations in an urbanizing Hanoi, rural migrant women with little education and few marketable skills have limited choices.

Many of the men remaining in informal waste collecting earn significantly more than their female counterparts. While there is no data to compare the price of metals over time in Hanoi, it is reasonable to argue that male electronics/appliance buyers could be earning more compared to their female counterparts because of a combination of factors – their ability (and willingness) to capitalize on new sources of waste in the city; their specialization in certain types of waste, which are, relatively, more profitable; a particular mix of macroeconomic shifts which have recently placed a high demand on certain recycled metals, found in electronics equipment, appliances and wiring; and finally, the gendered nature of the business, which elevates the work of men to a craft, affording them the social authority to capitalize on higher-valued waste, or alternatively, the economic means and marketable skills to move up or out of the business altogether. This is not to say that men's incomes will always remain higher, given that Vietnam's waste-recovery sector, as a whole, is now tied to increasingly unpredictable international waste-trade markets. As one junk buyer appropriately notes, "the buying and selling price of old household electronics/appliances mostly goes down now because Vietnam is going to join the World Trade Organization (WTO) and the price of new electronics is cheaper [so people buy new appliances instead of repairing their old ones]" (Survey Respondent #297).

Thus, the impact of urban change on informal waste collectors is quite dynamic and very much influenced by place, scale, and social mores (including, in the case of Hanoi, gendered notions of work and societal perceptions towards waste and waste workers). This nuanced understanding of informal waste-recovery is pertinent, as it adds to the growing literature on urbanization processes in Vietnam and its impact on people, in particular, the work of Leaf (2002), who explores the impact of globalization and peri-urban change for flower villages and Douglass et al. (2002), who have produced a comprehensive volume on Vietnam's urban transition. At the same time, this study has shed empirical light on the theoretical reflections posed by researchers concerning urban development and its effect on informal waste-recovery actors. The results of this research highlight how the livelihoods of informal waste collectors are very much dependent upon, and determined by, changes occurring at multiple geographic and economic scales. Moreover, this research highlights the need for a more geographi-

cal approach to understanding of the changing livelihoods of informal waste-recovery workers.

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References

- Baud, I., Grafakos, S., Hordijk, M., Post, J., 2001. Quality of life and alliances in solid waste management. *Cities* 18 (1), 3–12.
- China Daily, 2006. Scrap copper is gold dust in Guangdong. <http://english.people.com.cn/200608/09/eng20060809_291255.html> (accessed 16.08.07.).
- DiGregorio, M., 1994. Urban Harvest: Recycling as a Peasant Industry in Northern Vietnam. Hawaii, East-West Center. pp. 1–12.
- DiGregorio, M., 1997. City and Countryside in the Red River Delta: Notes on Hanoi's Recycling Industry. Hawaii, East-West Center. pp. 2–17.
- DiGregorio, M. et al., 1998. Linking community and small enterprise activities with urban waste management: Hanoi case study. *Urban Waste Expertise Programme*, 1–74.
- Douglass, M. et al., 2002. The Urban Transition in Vietnam. Department of Urban and Regional Planning, University of Hawaii and the United Nations Centre for Human Settlements.
- Drakakis-Smith, D., Dixon, C., 1997. Sustainable urbanization in Vietnam. *Geoforum* 28 (1), 21–38.
- Drummond, L., 1998. Urbanization in the outer city: a case study in Ho Chi Minh City's suburbs. *Malaysian Journal of Tropical Geography* 29 (1), 23–38.
- Environment Canada, 2007. The State of Canada's Environment. <<http://www.ec.gc.ca/soer-ree/English/soer/1996Report/Doc/1-7-4-7-4-1.cfm?StrPrint=true>> (accessed 27.08.07.).
- Furedy, C., 1997. Socio-environmental Initiatives in solid waste management in southern cities: developing international comparisons. *Journal of Public Health* 27 (2), 142–156.
- Furedy, C., 1999. Sustainable consumption and municipal solid waste reduction in developing countries in Asia. In: Savage, V., Ray, K. (Eds.), *Promoting Sustainable Consumption in Asian Cities*. UNCHS, Nairobi, pp. 86–107.
- Geertman, S., 2007. The Self-Organizing City in Vietnam: Processes of Change and Transformation in Housing in Hanoi. Bouwstenen Publicatieburo, Netherlands.
- Graham, S., Marvin, S., 2001. *Splintering urbanism: networked infrastructures technological mobilities and the urban condition*. Routledge, London.
- Hardy, A., 2003. State visions, migrant decisions: population movements since the end of the Vietnam War. In: Luong, H.V. (Ed.), *Postwar Vietnam: Dynamics of a Transforming Society*. Rowman and Littlefield, Maryland, pp. 107–138.
- Hayami, Y., Dikshit, A.K., Mishra, S.N., 2006. Waste pickers and collectors in Delhi: poverty and environment in an urban informal sector. *Journal of Development Studies* 41 (1), 41–69.
- Henin, B., 2002. Agrarian change in Vietnam's northern upland region. *Journal of Contemporary Asia* 31 (1), 3–28.
- van Horen, B., 2004. Fragmented coherence: solid waste management in Colombo. *International Journal of Urban and Regional Research* 28 (4), 757–773.
- Kaseva, M.E., Gupta, S.K., 1996. Recycling – an environmentally friendly and income generating activity towards sustainable solid waste management. Case study – Dar es Salaam City, Tanzania. *Resources, Conservation and Recycling* 17, 299–309.
- Leaf, M., 1999. Vietnam's urban edge: the administration of urban development in Hanoi. *Third World Planning Review* 21 (3), 297–315.
- Leaf, M., 2002. A tale of two villages: globalization and peri-urban change in China and Vietnam. *Cities* 19 (3), 23–31.
- Li, S., 2002. Junk-buyers as the linkage between waste sources and redemption depots in urban China: the case of Wuhan. *Resources, Conservation and Recycling* 36, 319–335.
- London Metal Exchange, 2007. Price Graphs. <http://www.lme.co.uk/copper_graphs.asp> (accessed 27.08.07.).
- Luong, H.V., 2003. Gender relations: ideologies, kinship practices, and political economy. In: Luong, H.V. (Ed.), *Postwar Vietnam: Dynamics of a Transforming Society*. Rowman and Littlefield, New York, pp. 201–224.
- Madsen, C., 2006. Feminizing waste: waste-picking as an empowerment opportunity for women and children in impoverished communities. *Colorado Journal of International Environmental Law and Policy* 17 (1), 165–200.
- McGee, T.G., 1995. The urban future of Vietnam. *Third World Planning Review* 17 (3), 3–26.

- Medina, M., 2000. Scavenger cooperatives in Asia and Latin America. *Resources, Conservation and Recycling* 31, 51–69.
- Medina, M., 2005. Waste Picker Cooperatives in Developing Countries. In: Cornell/SWEA/EDP/ WIEGO Conference: Membership Based Organizations of the Poor: Theory, Experience and Policy, Ahmedabad, India, January 17–21. <<http://www.wiego.org/ahmedabad/>> (accessed 26.04.05.).
- Medina, M., 2007. *The World's Scavengers: Salvaging for Sustainable Consumption and Production*. AltaMira Press, Lanham.
- Mehra, R. et al., 1996. Women in waste collection and recycling in Ho Chi Minh City. *Population and Environment: A Journal of Interdisciplinary Studies* 18 (2), 187–199.
- Monero-Sanchez, R.D.P., Maldonado, J.H., 2006. Surviving from garbage: the role of informal waste-pickers in a dynamic model of solid-waste management in developing countries. *Environment and Development Economics* 11, 371–391.
- Nas, P.J.M., Jaffe, R., 2004. Informal waste management: Shifting the focus from problem to potential. *Environment, Development and Sustainability* 6, 337–353.
- Ngo, D., 2001. Waste and informal recycling activities in Hanoi, Vietnam. *Third World Planning Review* 23 (4), 405–429.
- Overseas Development Institute (ODI), 2006. Internal migration, poverty and development in Asia. http://www.odi.org.uk/publications/briefing/bp_internal_migration_oct06.pdf (accessed 28.03.08.).
- Ojeda-Benitez, S., Armijo-de-Vega, C., Ramirez-Barreto, E., 2002. Formal and informal recovery of recyclables in Mexicali, Mexico: handling alternatives. *Resources, Conservation and Recycling* 34, 273–288.
- Pellow, D.N., 2006. Transnational alliances and global politics: new geographies of urban environmental justice struggles. In: Heynen, N., Kaika, M., Swyngedouw, E. (Eds.), *In The Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism*. Routledge, New York, pp. 226–244.
- Pollack, A., Bradsher, K., 2004. "China's Need for Metal Keeps US Scrap Dealers Scrounging". *The New York Times*, March 13th. www.nytimes.com (accessed 27.08.07.).
- Resurreccion, B.P., 2005. Women-in-between: gender, transnational and rural-urban mobility in the Mekong Region. *Gender Technology and Development* 9 (31), 31–56.
- Resurreccion, B.P., Khanh, H.T.V., 2007. Able to come and go: reproducing gender in female rural-urban migration in the Red River Delta. *Population, Space and Place* 13, 211–224.
- Recycling International, 2007. Playing the wait-and-see game. http://www.recyclinginternational.com/pdf_marketreports/MA_Nonferrous_0507.pdf (accessed 16.08.07.).
- Romanos, M., Chifos, C., 1996. Contributions of the urban informal sector to environmental management. *Regional Development Dialogue* 17 (1), 121–155.
- Schuler, S.R. et al., 2006. Constructions of gender in Vietnam: in pursuit of the three criteria. *Culture, Health and Sexuality* 8 (5), 383–394.
- Simpson, I., 2006. Copper thieves strip Italy in "red gold" rush. <http://news.sawf.org/Lifestyle/27614.aspx> (accessed 16.08.07.).
- Sincular, D., 1991. Pockets of peasants in Indonesian cities: the case of scavengers. *World Development* 19 (2/3), 137–161.
- Smith, D.W., Scarpaci, J.L., 2000. Urbanization in transitional societies: an overview of Vietnam and Hanoi. *Urban Geography* 21 (8), 745–757.
- Williams, I., 2007. Scavengers cripple Vietnam's internet line. www.financialdirector.co.uk/articles/print/2191721 (accessed 27.08.07.).
- Wilson, D.C., Velis, C., Cheeseman, C., 2006. Role of informal sector recycling in waste management in developing countries. *Habitat International* 30, 797–808.
- Yam, P., 2005. "Copper demand eases on prices and China cooling". *The Standard – China's Business Newspaper*. http://www.thestandard.com.hk/news_print.asp?art_id=1577&sid=4577823 (accessed on 16.08.07.).