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# CITY AND COUNTRYSIDE IN THE RED RIVER DELTA

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NOTES ON HANOI'S RECYCLING INDUSTRY

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### INTRODUCTION

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Early in this century, Andre Masson, looking over records left by French missionaries, adventurers and generals, concluded that Hanoi, at the dawn of colonial reconstruction, was not a city in the European sense (Masson, 1982). Of course, Hanoi in the late nineteenth century was a remnant of its past. In the aftermath of the Tay Son rebellion, subsequent Chinese attempts to reinstall the Le, sacking by the Black Flags, and state theft by the Nguyen, much of Hanoi's monumental architecture was destroyed or in disrepair and its population dispersed. Nevertheless, the city described by Masson's sources continued to reflect the historic relations between city and countryside that characterized the dynastic period: the citadel, the political and military center; the market, center of trade, and associated villages, sources of labor, raw materials and manufactured goods (Pedelahore, 1986).

In many ways, contemporary Hanoi is a city which has retained these characteristics of the past. Despite the current influx of foreign speculation, major threads woven through the fabric that makes up Hanoi continue to be dyed in the colors of these historic relations between city and countryside. This paper describes one part of this complex and dynamic whole, the recycling industry, a sector of the economy that includes the collection, trading, processing and manufacturing of goods from waste materials. Though it includes both the state sector and private urban traders, the recycling industry is largely organized as a network of settled and itinerant trades in which occupations strongly adhere to village identity. Through this linkage of particular occupations with territorial communities, the recycling industry creates its own economic space, a space that violates the administrative boundaries of city and countryside. In breaching these boundaries, the recycling industry benefits both urban and rural citizens through the reduction of wastes needing disposal, the provision of low cost materials to industries, and the reservation of income earning opportunities suitable to the needs of farming households.

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### 1. STATE AND MARKET IN THE MANAGEMENT OF SOLID WASTES

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For all intents and purposes, the Urban Environment Company is Hanoi's sanitation authority. At once a government line agency and a company responsible for generating some of its own operating income, the Urban Environment Company (URENCO) extends its authority over the sphere of sanitation through a system of decentralized units organized into six district level Environmental Enterprises, two Transport Units, a Nightsoil Collection Unit, a Street Washing Unit, a Mechanical Workshop, a Composting Plant, and a Refuse Treatment Unit. Each of these service units has its own administrative staff and budget, partly derived from public sources and partly from local fees or service contracts.

URENCO's planning staff estimate the total volume of waste generated in Hanoi by multiplying an average generation rate per capita ( $0.67 \text{ m}^3/\text{year}$ ) times the total population of Hanoi<sup>2</sup> (1.3 million people). To this sum is added daily averages for hospital waste ( $22 \text{ m}^3$ ), street waste ( $312 \text{ m}^3$ ), and hazardous waste ( $225 \text{ m}^3$ ). Following this method, URENCO staff have estimated the total volume of waste produced in

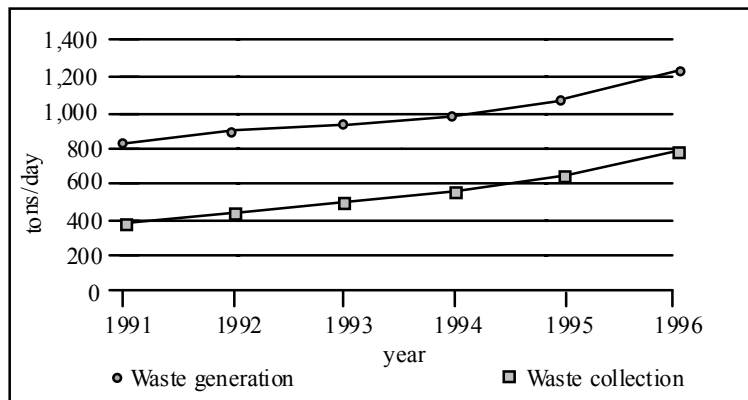
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<sup>2</sup> In 1996, when this calculation was made, Hanoi consisted of five central districts and five suburban districts.

Hanoi at 2,995 m<sup>3</sup> per day (URENCO, 1996). Given an average waste density of 0.413 t/m<sup>3</sup>, this amounts to approximately 1250 metric tons per day.

Following computer generated tables from tipping scales at the municipal landfill, URENCO has disposed of an average of 790 metric tons of waste per day during 1996. This amounts to a collection rate of about 63 percent.

Over the past five years, URENCO has consistently increased its capacity to collect Hanoi's waste. Despite these efforts, increasing population, rising urban population densities, and changes in consumption patterns have rapidly increased the demand for URENCO's services (figure 1.1). Thus, while collection rates have risen from around 45 percent in 1991 to 63 percent at present, the residual of uncollected materials has remained fairly stable.



**Figure 1.1.** Waste generation and collection, Hanoi (1991-1996)

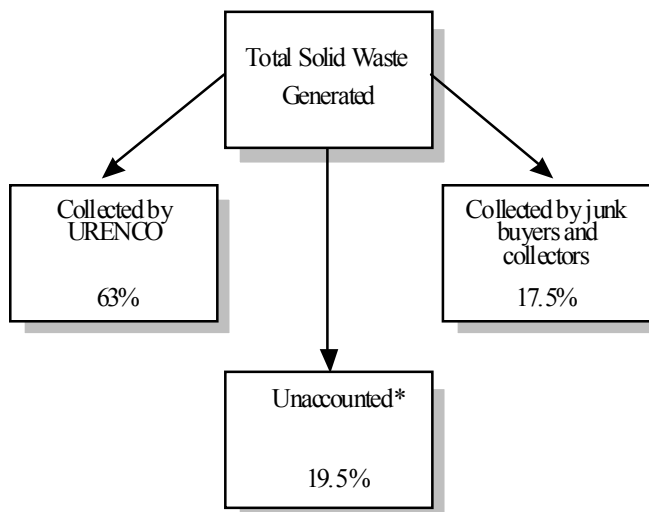
URENCO's stated goal is to collect "100 percent of the waste generated in Hanoi" (Ibid., 1996). To reach this goal, the company has engaged in a long term planning and investment process that includes upgrading transportation equipment, construction of hospital waste incinerators, transfer stations, and composting plants, and creation of a huge new waste processing zone about 40 kilometers north of city. Despite these investments, however, URENCO may not be able to reach its stated goal. Much of the residual that URENCO considers a failure in its duties is managed by waste haulers and recyclers in the private sector who are not likely to relinquish their livelihoods, as difficult as they may be, even under extreme duress.

Through a survey of 346 itinerant junk buyers (ngoui dong nat) and collectors (ngoui nhac) working in central Hanoi, as well as Cau Dien (the municipal composting plant) and Me Tri (the municipal landfill) conducted in November 1996, the author was able to determine average daily recycling rates for individuals by worksite, occupation and gender. The average collection rate for junk buyers and collectors working within central Hanoi was 35.5 kilograms of recyclable materials per day. Men collected double this average while young people collected much smaller amounts. Recyclers working at Cau Dien, the municipal composting plant, and Me Tri, the municipal landfill, collected, on average, much smaller volumes of recyclable materials than those working within central Hanoi, 12.9 and 26.2 kilograms per day, respectively.

Estimates of the total volume of materials collected at each of these sites - central Hanoi, Me Tri and Cau Dien - are dependent on reliable estimates of the labor force. For those working at Cau Dien and Me Tri, both clearly bounded facilities, this is a relatively easy task. But for those working within central Hanoi, estimates are much more difficult to make. In 1992, the population of itinerant junk buyers and collectors

working in Hanoi was calculated using a combination of methods that included areal surveys, transects and interviews with key informants in village and ward level People's Committees (DiGregorio, 1994). The peak labor force, about 90 percent of the total labor force, was estimated at 5,775 persons. Taking together fluctuations in the work cycle, an average of 4,700 itinerant junk buyers and collectors were estimated as working in Hanoi in that year. This figure is proportionately similar to estimates of recyclers in other Southeast Asian cities.

Using transects and interviews, the author estimated a total labor force of more than 8,000 junk buyers and collectors in 1996<sup>3</sup>. Due to fluctuations in the work cycle, however, only about 6,000 persons were working within Hanoi on a yearly average. The average volume of waste recycled in central Hanoi, about 213 metric tons per day, was estimated by multiplying this average by the average individual collection rate of recyclers working in the central city. Similarly, the 225 recyclers working at Cau Dien and Me Tri collect an average of 5.5 metric tons daily, for a total of 218.5 metric tons per day. This represents 17.5 percent of the waste generated within Hanoi<sup>4</sup>. Thus, taking Hanoi's itinerant junk buyers and collectors into account reduces the residual of unaccounted waste from 37 percent to under 20 percent (figure 1.2), a figure rarely matched in rapidly growing Asian cities.



**Figure 1.2.** Flow of materials in Hanoi's waste stream  
\* Includes materials recycled directly by producers as well as refuse disposed of in ponds, on dikes and along lanes

The effects of this combined approach to waste management in transforming the composition of waste arriving at the municipal landfill is illustrated in table 1.1. This table compares two dated samples of refuse arriving at the municipal landfill and materials recovered by recyclers. In each case, low levels in the refuse stream correspond to high levels in the recycling stream. Thus, for example, while paper accounts for less than three percent by weight of the refuse stream, it accounts for 31 percent of the recycling stream. Equally, while scrap metals account for about 1 percent by weight of the refuse stream, they account for 37 percent of the recycling stream.

<sup>3</sup>Though consistent with population growth in Hanoi, this number was much greater than expected and is subject to revision. following interviews with People's Committee representatives in home villages.

<sup>4</sup>Using the lower labor force estimate from 1992 reduces the proportion of waste collected by recyclers to 14 percent. In 1992, when waste generation was an average of 832 tons per day, recyclers collected about 21 percent of generation on a yearly average.

**Table 1.1.** A comparison of the composition of refuse and recycled materials

<i>Composition of refuse arriving at the municipal landfill</i>	% by weight of total		<i>Composition of materials recycled in central Hanoi</i>
	1994	1996	
Leaves, branches, food waste, dead animals, and shells	51.9	2.8	Bone and feathers
=10 mm inert matter	31.9		
Tile, bricks, stone, earthenware	6.1		
Plastic, rubber, leather, wood	4.3	9.4	Plastics
Paper	2.7	30.7	Paper
Cloth	1.6		
Metal	0.9	37.2	Metal
Glass	0.5	20.0	Bottles and glass

Sources: URENCO, 1995, and Survey Data, Nov. 1996

## 2. INCOME GENERATION

Apart from its role in reducing and transforming the amount of waste needing disposal, recycling plays an important part in generating income for many thousands of recyclers. The average daily income for all collectors and itinerant junk buyers surveyed during the month of November, 1996 was 1.41 USD (table 2.1). This is about three times the income level reported in 1992 and about five times greater than comparative agricultural wages. .

**Table 2.1.** Daily income, expenses and saving by work site.

	Daily Income			Daily Expenses			Monthly Savings
	low	high	avg.	housing	food	other*	
Urban recyclers	\$0.67	\$2.61	\$1.41	\$0.23	\$0.46	\$0.23	\$23.22
Provincial residents	\$0.62	\$2.06	\$1.29	\$0.20	\$0.43	\$0.21	\$22.63
female	\$0.59	\$1.89	\$1.19	\$0.22	\$0.38	\$0.26	\$22.21
male	\$0.70	\$2.48	\$1.53	\$0.14	\$0.56	\$0.17	\$23.67
Ha Noi residents	\$0.86	\$4.99	\$1.88	\$0.73	\$0.61	\$0.25	\$25.89
female	\$0.71	\$2.47	\$1.57	\$0.00	\$0.44	\$0.28	\$23.88
male	\$0.98	\$7.06	\$2.14	\$0.73	\$0.73	\$0.24	\$27.47

Source: Survey Data (1USD = 10,000VND)

Nearly 75 percent of the respondents said that they worked as recyclers in order to meet their daily expenses, many (36 percent) because life in the countryside could not provide them with enough to eat. Savings were used to pay for, among other things, children's education (52%), health care expenses (32%) and costs associated with participation in community ceremonies (29%). There was not much variation in these figures between rural residents and residents of suburban Hanoi. Women from the provinces, however, were more likely to be working for their household needs than men. This included paying for children's education (58% to 38%), meeting health care costs (38% to 23%), and paying for participation in community ceremonies (32% to 19%).

The flow of incomes earned in the recycling industry to rural communities is thus an extremely important component of the waste recovery system. Nearly all (98%) of those employed as itinerant collectors and junk buyers in Hanoi in 1996 were permanent residents of suburban districts of Hanoi (17%) or rural provinces (81%), particularly Nam Ha (58.8 %) and Ha Tay (13.9%). Residents of rural provinces working as junk buyers and collectors in Hanoi work an average of 8.3 months per year and save an average of 22.62 USD per month. Those from the suburbs work a longer year, 9.8 months on average, and have slightly higher savings, 25.89 USD per month. An average labor force of 4,800 junk buyers and collectors from rural provinces would thus be able to generate more than 900,000 USD in savings, more than 600,000 USD of which are accrued by residents of a single district in Nam Ha province, Xuan Thuy<sup>5</sup>. About 250,000 USD in savings would be available to recyclers from Hanoi's suburbs. While these figures should be taken as representative rather than exact, they do suggest that recycling provides an invisible fund for rural development which, if our survey data is correct, is being spent on children's' education, health care, community cultural life, and farm inputs.

In summary, private recyclers working primarily in the city play an important role in reducing and transforming waste needing disposal. At the same time, they are able to use savings from work in recycling to meet basic educational, health, farming and community costs in the countryside. 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 periphery of the state's development agenda. On the one hand, this exclusion is welcome: if the history of resource development in other Southeast Asian countries holds true for Vietnam, discovery of wealth in recycling could lead to attempts at monopolizing the resource. On the other hand, lack of attention to the larger issue at stake, the intensification of urban-rural interaction within the Red River delta during the post-*fo3i m]1i* period, may lead to missing opportunities for both urban and rural development.

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### 3 TERRITORIALITY WITHIN THE RECYCLING INDUSTRY

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Like many other trades within the Red River delta, recycling has developed as a village specialization. Such village specializations have been frequently noted in Vietnamese journals (Hue, 1993) and monographs (Ngoc, 1993) as a product of the combination of environmental, economic and social factors. The most detailed catalog, however, was supplied by Pierre Gourou (Gourou, 1936). Relying primarily on family labor, he called these trades "peasant industries" since the majority of those employed were peasants "who would give themselves entirely to agriculture if their land were enough" (Ibid., p. 487). According to Gourou's calculations in the mid-1930s, roughly 7 percent of the adult population of the rural Delta, more than 250,000 people, was employed in 108 specific trades<sup>6</sup>. This population, however, was not distributed evenly. In the most densely "industrial" districts between 20 and 30 percent of the adult population was employed wholly or partly in non-agricultural work. Within those villages that had discovered and developed a specialization, however, between 40 and 90 percent of the adult population were employed in non-agricultural trades at least part of the year.

In many cases, only specialized parts of a manufacturing process were carried out in these industrial villages, with inputs being purchased from other specialized villages. Gourou considered this degree of

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<sup>5</sup>In 1993, the chairman of Xuan Thuy People's Committee estimated that if each of the 17,000 residents of the district working in other provinces returned with 50 USD in savings, this would add over 850,000 USD to the district (Li, 1996)

<sup>6</sup>Gourou estimated that about 20 percent of those employed in peasant industries produced processed food.

specialization to be based on two primary factors. First, there was a clear tendency towards monopolization of techniques and services that was upheld by customary village law. Second, the general poverty of crafts people made it difficult to carry a process through completion of the finished product. As a result, the rural industrial economy became interlaced with multi-stranded trading relationships that linked villages and households into extensive commercial networks, many of which were geographically far-flung.

While much of the production process occurred in the countryside, both in the case of settled and itinerant trades, one significant breach into the urban economy was present in the linking of particular villages with trade streets (pho phuong) in Hanoi (Thin, 1997). These arrangements provided urban outlets for village products, often tied through guild, kin, or territorial affiliation, on streets generally named for the type of goods being sold. This arrangement was beneficial for shop owners, crafts people and customers. For shop owners, it provided a clearly marked space in which the circulation of materials and information could occur. For crafts people, it provided an outlet for their labor which did not require leaving home villages. For customers, it provided a venue for comparative shopping and bargaining.

The return of economic responsibility to households in the Red River delta that took place between 1979 and 1989 made re-establishment of inter-village and rural-urban links possible and, in fact, necessary. While each of these re-linkages has followed its own, specific chain of events, the general pattern is one in which the withdrawal of the state from management of the household and village economy created an organizational vacuum and need for non-agricultural income that was filled through a recovery of older patterns of inter-household and inter-village trade (DiGregorio, 1994). In some cases, relationships established within the planned economy, such as relationships with state trading companies, facilitated these re-linkages. In others, assistance from friends, relatives and village patrons sedimented into patterns of trade that are structurally similar to those that existed before the August revolution.

Recycling is one among many contemporary village trades that exhibits these territorial characteristics. About 59 percent of the recyclers surveyed in Hanoi were residents of Nam Ha<sup>7</sup> province. About 96 percent of this group were residents of one district in that province, Xuan Thuy. Half of the villages represented in this sub-sample<sup>8</sup>, 97 percent of the Xuan Thuy residents surveyed, lived in the northern portion of the district, in what was formerly and is now again called Xuan Truong district. Among these, more than half of those surveyed, equal to about 2,000 individuals, were residents of two villages, Xuan Hong and Xuan Thuong. In other words, about one-third of the total population of recyclers working in Hanoi are from two villages in a rural district more than 130 kilometers from the city center.

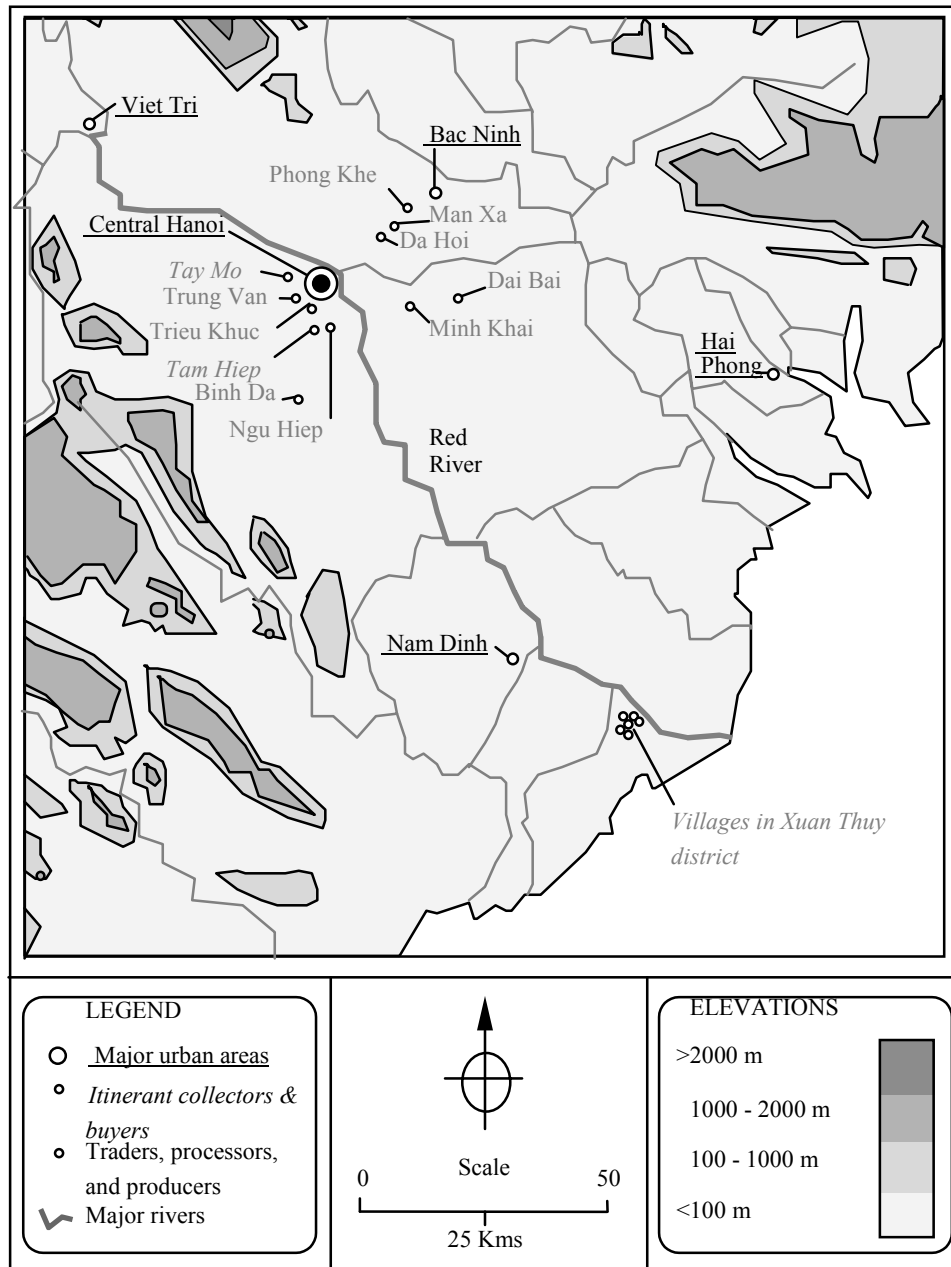
Xuan Thuy residents entered the junk trade some time in the 1930s. At that time, Mr. Nam Diem, a native of Xuan Thuong village was hired to manage a French owned sanitation company. This company, known by older recyclers as the Nam Diem company, drew many migrants from Xuan Thuy to Hanoi. Given that farmers in the village were capable of producing only one rice crop per year in the 1930s, work for the Sanitation Company, despite its hardships<sup>9</sup>, must have appeared as a great boon. After the war for independence, the staff and facilities of the Nam Diem company became the core of the Hanoi Sanitation Company (CTVS). In 1992, the Sanitation Company was re-organized to form URENCO. Headquarters for the Sanitation Company were near Hoang Cau village in what is now Hanoi's O Cho Dua ward. Children of Sanitation Company employees, accustomed to work with waste through scavenging at landfills, began venturing into the city to collect recyclable materials not long after the community was established. By the early 1960s, the more prosperous of these junk buyers and collectors began setting up shop near Sanitation Company facilities in the ward.

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<sup>7</sup>Now Nam Dinh and Ha Nam provinces. About 56 percent of all recyclers interviewed for this study were residents of Nam Dinh.

<sup>8</sup>Xuan Hong, Xuan Thuong, Xuan Phong, Xuan Phu, Xuan Thuy, Xuan Chau, Xuan Thanh, Xuan Bac, Xuan Dai, and Tho Nghiep.

<sup>9</sup>The work of Xuan Thuy residents included collection and processing of nightsoil for use as fertilizer. This was reportedly exported to France in the form of 1 kilogram dry bricks.



**Map 2.1.** Some villages involved in the collection, processing or manufacturing of products from waste materials.

With the introduction of the household responsibility system in the late 1970s, residents of O Cho Dua began inviting relatives and friends from their home district to take part in the junk trade. As profits available from the trade became clear, other people joined. After 1989, when rural farmers were released from their commitments to agricultural cooperatives, the population of the ward began to explode. Currently, more than half of the Xuan Thuy recyclers, about 1,800 people, live in boarding houses in O Cho Dua ward.

Residents of Thanh Tri district in suburban Hanoi comprise the second largest group in the sample. The majority (27/32) were residents of Trieu Khuc village (map 2.1). According to Ngoc (1993), Trieu Khuc village has been involved in recycling since the 17th century. By the late 19th century, many members of the village had become rich through this trade and the village market, situated on the road between Hanoi and

Ha Dong, had become a major trading center. As in Xuan Thuy, the late 1980s and early 1990s witnessed a recovery and expansion of recycling activities by residents of Trieu Khuc. Currently, residents of the village control a majority of the sidewalk recycling depots in Hanoi.

Residents of Trieu Khuc and Xuan Thuy are joined in the recycling industry by recyclers from a number of manufacturing or waste processing villages in the suburban districts and provinces surrounding Hanoi. These include Binh Da (Ha Tay, paper), Phong Khe (Ha Bac, paper), Man Xa (Ha Bac, aluminum), Minh Khai (Hai Hung, plastic), Vinh Loc (Ha Tay, ferrous metal), Mai Linh (Ha Tay, ferrous metal), Ngu Hiep (Thanh Tri, copper), Dai Bai (Hai Hung, copper), and Trung Van (Tu Liem, plastic). Residents of Tam Hiep (Thanh Tri) and Tay Mo (Tu Liem) work as collectors at the two public facilities, Me Tri and Cau Dien, respectively.

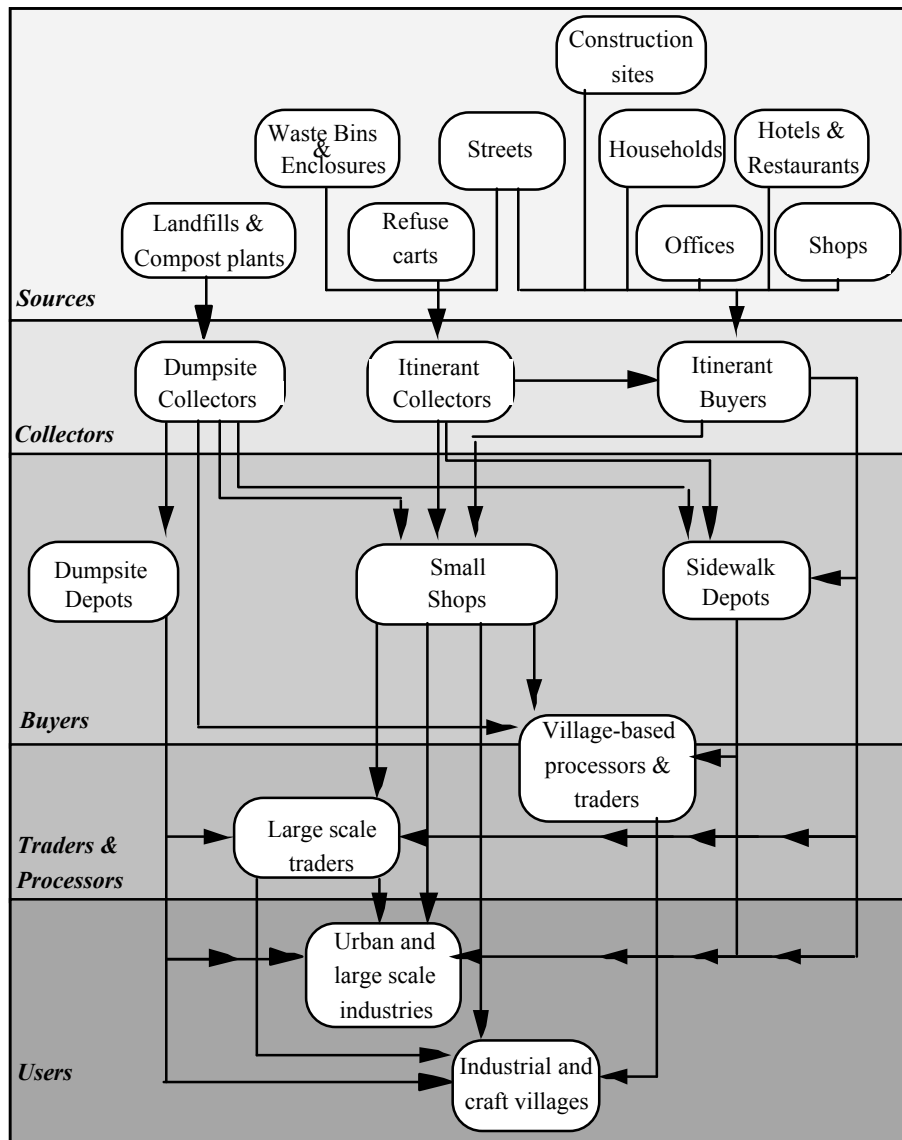
While this network of villages does not capture the whole market for recyclable materials, its activities form the basic structure of the trade (figure 2.1). In this structure, collectors and buyers move materials from sources within the city, many of which are controlled by URENCO, and from URENCO sites at Cau Dien and Me Tri. Collectors and buyers sell their goods to depot operators and small shops owners, though they can also sell directly to processors and manufacturers. Owners of small shops and depots process materials either for delivery to users or to larger traders. These traders most frequently supply larger manufacturers but will also sell to smaller manufacturers in industrial villages.

Specialized villages are active at every level of the industry, from collection to manufacturing, though the impact of this territorial division of labor on the volume of materials recycled varies by material. The steel mills in Thai Nguyen, for example, consume far higher levels of low grade scrap metal than, for example, metal working villages in Ha Bac and Ha Tay provinces which purchase scrap construction steel. On the other hand, a large volume of plastic is processed in Minh Khai, much of it used locally. Waste paper is in high demand by manufacturers within Hanoi city, where there are at least 15 factories producing kraft, writing and toilet paper, as well as in paper making villages such as Phong Khe which produce similar products.

How can this degree of village specialization be explained? The simple answer is contingency. As Gourou noted 60 years ago, the distribution of village trades rarely follow any of the standard theories of the distribution of industry in economic space. Rather, trades often developed by chance, through the discovery of profitable activities by one or more village members. As profits from these activities became evident, other members of the village or hamlet joined in, beginning with those who were related to the originator of the trade and spreading from them to other members of the hamlet or neighboring hamlets who shared similar needs for non-agricultural income. Thus, for example, residents of Xuan Thuong followed Mr. Nam Diem to Hanoi in the 1930s to establish their niche in the waste economy. More recently, women from the same village, encouraged to come up to Hanoi to earn extra income in the late 1970s, pioneered re-establishment of the village's presence in recycling. The process has been and continues to be repeated as new villages are introduced to the trade, new techniques or products are developed, and new materials are substituted for old. Thus, for example, a chance meeting between a women from Minh Khai village and a junk buyer in 1979<sup>10</sup> led to a shift in occupations in that village from potato farming, the village is still known as Potato village (*lang khoai*), to waste processing. Similarly, changes in markets have forced metal workers in Da Hoi and Vinh Loc to shift production from their traditional goods - agricultural tools - to construction metal.

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<sup>10</sup>Fittingly, the question asked by the woman from Minh Khai was, "Does this occupation give good profit?"



**Figure 2.1.** Structure of Hanoi's recycling industry

While it seems clear that both chance and similarity of conditions within households and hamlets play a part in the discovery and dissemination of trades, explaining why they persist is much more difficult to determine. Like the discovery and development of these trades, the answers are part cultural and part economic, but they also have to do with tension in relations between central and local authorities that have long characterized relations between city and countryside in the delta (Luong, 1993). Many of the trades established during the dynastic period received the imprimatur of the state through establishment of the cult of the founder. In recent years, many of the festivals surrounding these foundation cults have been revived, serving as a focal point for community identity. There are many, often quoted, Vietnamese expressions that illustrate this feature of Le Dynasty village life which have come to be regarded as characteristic of "traditional" Vietnamese villages in general. What these expressions underscore, as well, is the need for structure within community life greater than the household but not as distant as the central state. In many ways, the physical boundaries of the village and hamlet, the territorial community, filled this function, bringing together various guilds, lane, age group, and trade associations, lineage societies, and classes into a

contentious, but affiliated entity<sup>11</sup>. While the forms and types of social groupings within these territorial communities have changed, village identity continues to serve some of the same purposes. It provides an identity whose meaning and purpose varies among those who consider themselves within its borders. In some cases, particularly the better established industrial villages, the majority of which are economically organized around household and family enterprises, territorial affiliation serves as a surrogate corporation.

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### 3. WET RICE AGRICULTURE AND THE ORIGINS OF VILLAGE INDUSTRY

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The adhesion of community identity and occupation within villages and hamlets throughout the delta in large part reflects common conditions and constraints. Irrigated rice agriculture, as has been frequently noted (Geertz, 1963, Bray, 1986 and Huang, 1990), is open to intensification under conditions of high labor availability and requires intense periodic labor while providing slack seasons in which other economic activities can be pursued. It also requires both communal and state organized labor inputs for land development and maintenance. Within the Red River delta, land infertility, slight elevations that make irrigation difficult, or high population densities<sup>12</sup> relative to farm land, have combined with these general features of irrigated rice cultivation to make it both possible and necessary for farmers in particular areas to develop non-agricultural activities to meet their needs or improve their standards of living. There are, in general, three ways of achieving this end. The first means is through the discovery and development of village industries. This was largely the subject of Gourou's study of peasant industries. The second option is to sell labor to households in neighboring villages that have such trades. This option is generally overlooked in the literature on contemporary rural development in Vietnam<sup>13</sup>. The third is to discover and develop an itinerant trade. The work of junk buyers and collectors from rural provinces fits into this last category, as does, with varying degrees, the work of circular migrants in general.

**Table 3.1** Access to rice land, number of persons by work site and place of origin.

Work site	<i>Residence</i>		<i>Suburbs</i>		<i>Provinces</i>		<i>Total</i>
	<i>Central Hanoi</i> no rice land	<i>Central Hanoi</i> rice land	<i>no rice</i> <i>land</i>	<i>rice land</i>	<i>no rice</i> <i>land</i>	<i>rice land</i>	
Central Hanoi	5	1	16	35	21	213	291
Me Tri	1	0	7	20	2	2	32
Cau Dien	0	0	0	11	0	1	12
Total	6	1	23	66	23	216	336

Source: survey data

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<sup>11</sup>The Comaroffs make similar observations regarding ethnicity as a boundary that divides members from non-members, is instantiated by power relations, and has different meanings and purpose for various social grouping within (Comaroff and Comaroff, 1992).

<sup>12</sup> The Red River Delta is one of the most densely settled agricultural regions in the world. The average population density of non-urbanized areas in the delta is approximately 980 persons per square kilometer. In some delta districts, especially those in the southern area, population densities are over 1,200 persons per square kilometer (Cuc and Rambo, 1993).

<sup>13</sup>One exception to this is a fine working paper by Regina Abrami (1995).

About 85 percent of the junk buyers and collectors interviewed in Hanoi had access to rice land (table 3.1). This included nearly 91 percent of the recyclers whose homes are in the provinces, 74 percent of the suburban recyclers, and only 1 urban resident<sup>14</sup>. Thus recycling does not appear to be based on an exodus of landless peasants from the countryside. On the contrary, for the majority agriculture continues to play an important part of their economic and cultural lives.

The average amount of rice land held by recyclers from the provinces is 418 square meters per person (table 3.2). The average amount of paddy retained by rural recyclers per season and plot - after expenses, taxes and fees - is 85.3 kilograms. In Hanoi's suburbs, the average is 371 square meters of rice land per person and 82 kilograms of paddy retained per person per season and plot. Since about 30 percent of paddy is lost in milling, this leaves under 60 kilograms of milled rice per person per season, or about 9 kilograms per month available for consumption. Normal consumption ranges up to 20 kilograms of rice per person per month. It should come as no surprise then that many households in the countryside lack rice towards the end of the long winter - spring growing season (*giap hat*). Given this situation, it should also be obvious that the discovery and retention of profitable non-agricultural trades (or the ability to sell labor to villages that have such trades) is of vital importance to the improvement, and in some cases, survival of rural households in the Red River delta.

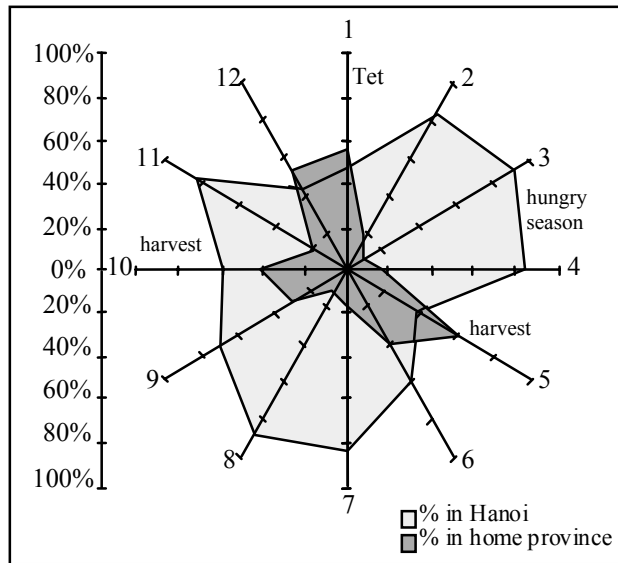
**Table 3.2** Average land holdings, yield and expenses by place of origin of junk buyers and collectors

Residence	Agriculture	Rice land	Yield	Expenses	Paddy	Milled rice
		per capita (360 m <sup>2</sup> )	(kg paddy/crop)	(kg paddy/crop)	Retained (kg/plot)	Retained (kg/plot)
Central Hanoi		0	0	0	0	0
Hanoi Suburbs		1.03	131.8	49.8	82.0	57.4
Provinces		1.16	150.6	65.3	85.3	59.7

Source: Survey data

Given the continuing role that agriculture plays in the lives of these itinerant trades people, one would expect that their annual work cycle would correspond to the opportunity and constraints of wet rice farming. Figure 3.1, illustrates the spatial divisions of labor within the annual work cycles of itinerant junk buyers and collectors from rural provinces. As noted above, residents of rural provinces comprise 81 percent of the labor force. As one might expect, low points in their participation in the Hanoi recycling industry correspond to high points in the agricultural cycle. Also note that over half of the labor force return to their homes for the Tet holidays.

<sup>14</sup>Among the 15 percent of the sample that did not have rice land, the majority (82%) considered recycling their main occupation. Most rural residents without access to rice land spent longer portions of the year in Hanoi (10.3 months) than those with rice land (8.0 months). Age appears to be one factor in access to rice land since those without land were generally younger or older than those with land.



**Figure 3.1.** Percent provincial recyclers in Hanoi or home province, by lunar month (1996)

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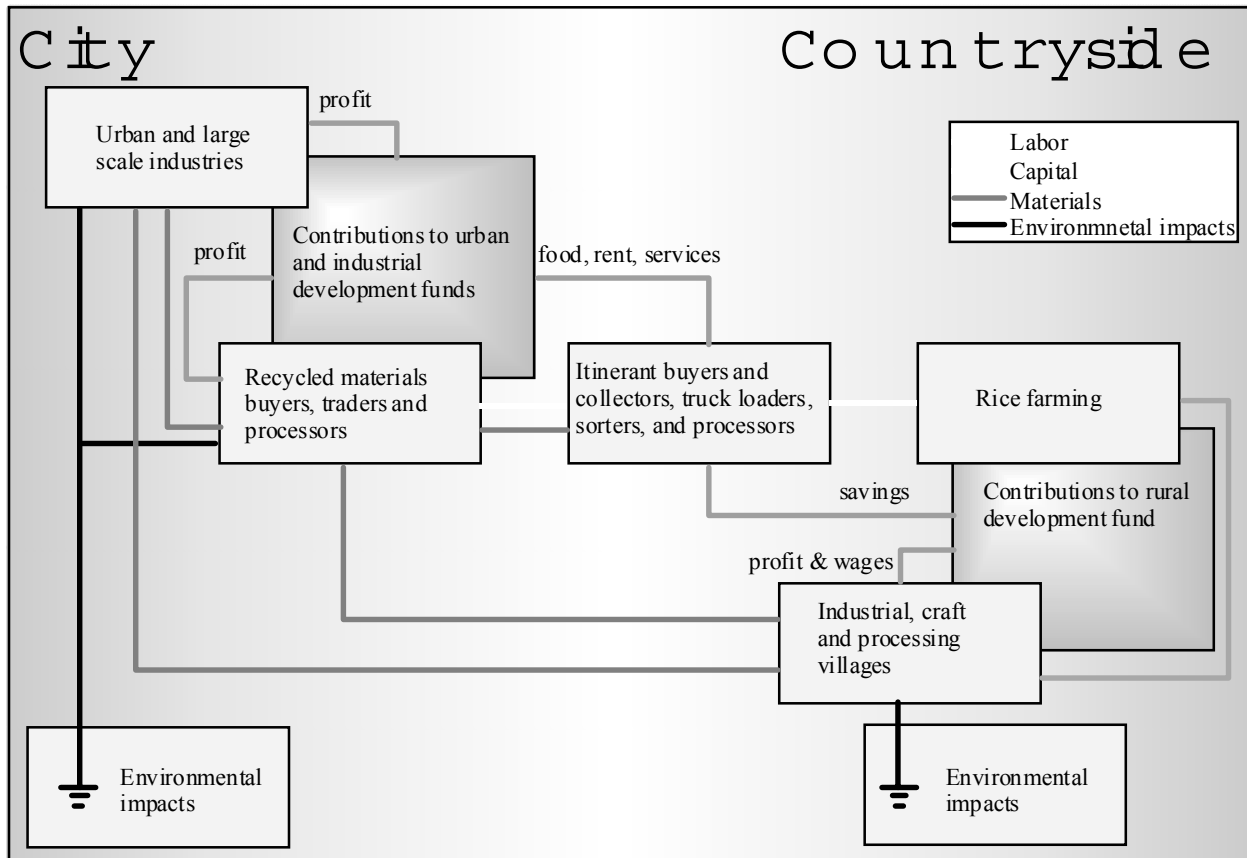
#### 4. THE MEANING OF TERRITORY IN RELATIONS BETWEEN CITY AND COUNTRYSIDE

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Figure 4.1, which summarizes the structural aspects of my argument, illustrates the flow of material, labor, and capital between city and countryside in the recycling system. The bulk of the labor force, about 80 percent, are rice farmers. During agricultural off seasons, these rice farmers travel to Hanoi to work as junk buyers and collectors, truck loaders, and waste processors within the recycling industry. Their work in Hanoi provides income needed to cover their daily expenses plus a small amount in savings, much of which is returned to home villages.

The work of these recyclers also directly and indirectly contributes to urban development through the money they pay for services, food, rent and clothing and through the profit that urban entrepreneurs make from their labor. They also contribute to both urban and rural development funds by adding to the stock of materials re-circulating through the production cycle. Some of these materials enter into urban and large-scale industries such as the Truc Bach paper company (Hanoi) and Thai Nguyen steel mills (Bac Thai province). Others pass back to the countryside, where they are either processed in specialized villages such as Trieu Khuc and Minh Khai or transformed directly into products in industrial or craft villages such as Trung Van and Phong Khe.

As in the flow of materials, labor and capital between city and countryside, there is also an exchange between industrial villages and neighboring agricultural villages. In both Da Hoi and Phong Khe, about one thousand persons from surrounding agricultural villages are employed in the community's trade. Industrial villages provide wages higher than average agricultural wages and, while employment is rarely contracted formally, the labor force is generally stable.



**Figure 4.1.** Economic interaction between city and countryside in the recycling industry

While enlightening in their own right, structural arguments cannot explain why or how particular villages have become integrated into these relationships. Answering these questions require research into the conditions under which these trades developed and the human agencies involved. The development of recycling as a specialization by residents of Xuan Truong district clearly illustrates this. Similar histories have emerged in the discovery of particular trades both within the recycling industry, such as the discovery of plastic recycling by residents of Minh Khai village, and outside this sector, such as the recent discovery of noodle making by a group of villages in Ha Tay province. Second, though often called traditional trades (nghe truyen thong), the moniker of tradition does not imply lack of developmental capacity. In each of the villages visited for this research, villages which generally practiced industrial or service trades, "tradition" carried with it the meaning of whatever the majority of crafts people or traders were doing at the moment<sup>15</sup>. In other words, while the recovery of local tradition served as an entry point into the post-fo6#i m]li economy, tradition was no barrier to development. The metal workers of Da Hoi have switched from agricultural tools to steel re-inforcing bar; copper smiths in Dai Bai are now making lock parts, and rope makers in Trung Van have switched from bamboo to waste plastic as their material source.

## 5. CONCLUSIONS

What then does this mean in regards to the future of recycling in Hanoi? The first and most obvious observation is that as long as buyers, collectors and traders retain a foothold in agriculture they are able to

<sup>15</sup>In an earlier draft of her working paper on "symbiotic villages", Abrami makes a similar point (Abrami, 1995).

weather down turns in the market for recycled materials by retreating into the farming economy. In ideal terms, the withdrawal of labor and capital from particular material sectors reduces the amount collected and processed, thus allowing for a recovery of prices. In reality, however, two forces impede this: price competition with raw materials and the tendency of collectors to increase their efforts in order to maintain income levels in declining markets. Under these conditions, Hanoi scrap traders - like private traders working under the pressure of mandatory recycling laws - must be able to stockpile materials in anticipation of price recovery or temporarily retreat from the market altogether. In fact, a recent downturn in the price of scrap metal has seen both occur. In this regard, those households who are able to retreat into agriculture have an advantage over those that cannot<sup>16</sup>.

The second point has to do with village industries. Village industries benefit through a relation to agriculture both as sources of labor and, in many instances, as a fallback during market failure. This allows village industries to compete with private, state and state-foreign joint venture firms in the area of price and quality. This, however, is a losing battle over the long-term as consumer preferences change and the market for low-cost, low-quality goods shrinks. Retaining or expanding market share would require development and introduction of technologies - designed for use in the horizontally integrated networks of firms that characterize village industries - that are able to raise quality without prohibitively raising cost.

The third point has to do with social solidarity. The relationship between territory and trade provides a ready framework for the formation of village level development associations. Such associations currently are formed around particular projects and dissolve once those projects are completed. In part this is due to fear of structures larger than the household and in part it is due to a well-grounded fear of bureaucratic hegemonism. Creating development associations capable of injecting capital, technology, and training into the recycling industry in ways acceptable to those involved is essential if the limitations of individual and family enterprises are to be overcome.

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<sup>16</sup>Reportedly, half of the scrap metal dealers from Xuan Thuy returned to their farms during this episode.

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