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From Trash to Cash, recovering practices, wholesale markets and industrial recycling in Delhi

Từ rác đến tiền, phương thức khôi phục rác, chợ bán buôn rác và tái chế rác công nghiệp ở Delhi

Remi de Bercegol

Tóm tắt

Với dân số đô thị toàn cầu là ba tỷ, các thành phố hiện đang tạo ra khoảng 1,3 tỷ tấn chất thải mỗi năm (Theo Ngân hàng Thế giới năm 2012). Đến năm 2050 các thành phố, hầu hết trong số này ở miền Nam, sẽ chiếm hai phần ba tăng trưởng dân số toàn cầu, tạo ra khối lượng chất thải thậm chí còn lớn hơn. Mặc dù chủ yếu bị lãng quên bởi các chính sách đô thị, vấn đề về chất thải đô thị đã trở thành một vấn đề lớn trong bối cảnh đô thị hóa toàn cầu (Un-Habitat, 2010). Hiện nay người ta thường công nhận rằng chúng ta cần kiểm soát tốt hơn các tác động môi trường xã hội đối với khí thải con người, một nguồn gây ô nhiễm môi trường và “bất công với môi trường” (Durand, 2015), ảnh hưởng đặc biệt đến các vùng ven của thành phố với sự xuất hiện của bãi rác khổng lồ và các dạng ô nhiễm ngày càng nghiêm trọng. Bộ phim này nói về sự phục hồi không chính thức của các vật liệu được thực hiện bởi công nhân xử lý rác thải (Corteele, Le Lay 2011).

Từ khóa: Delhi - India, người nhặt rác, hệ thống phi chính thức, quản lý chất thải rắn

Abstract

With a global urban population of three billion, cities are currently generating around 1.3 billion tons of waste every year (The World Bank 2012). By 2050 cities, most of them in the South, will account for two thirds of global demographic growth, producing even greater volumes of waste. Although widely neglected by urban policies, the question of urban waste has become a major issue in the context of global urbanisation (Un-Habitat, 2010). It is now commonly accepted that we need to better control the socio-environmental impacts of human emissions, a source of multiple pollutions and “environmental injustice” (Durand, 2015), affecting in particular the margins of cities’ with the emergence of gigantic landfill sites and increasingly severe forms of pollution. This film presents the informal recovery of materials done by “waste workers” (Corteele, Le Lay 2011).

Key words: Delhi – India, waste – picker, informal system, waste management

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Introduction

This film¹ presents the informal recovery of materials done by “waste workers” (Corteele, Le Lay 2011) and the recycling practices in Delhi. Waste recovery provides a particularly relevant point of observation to understand the sector’s economic and environmental challenges, as well as the marginalization of waste workers. The film consists in tracking the “informal” actors of the waste recovery chain, from its collection through to its processing by industries. Because of its gigantic proportions, the case of India provides a concentrated image of the socio-environmental issues associated with the consumerist and productivist model, which generates a growing amount of urban waste while paradoxically marginalizing the people who contribute to reducing its volume. In India, waste recovery is heavily stigmatised due to its association with the impurity of waste. This phenomenon is reinforced culturally by caste exclusion. Most waste pickers come from hierarchically stigmatised castes². They are relegated to the very margins of society, marginalised both socially and geographically, and forced to live in dangerous areas. This relegation to informality creates situations of brutal exploitation, as well as diminishing the efficiency of the recovery and recycling process.

One of the major aspects of this documentary deals with the paradoxical figure of “waste pickers”: they are invisible but remain eminently present and recognisable in public spaces; they usually live in the periphery, but have a very thorough knowledge of the city, its residents and their detritus (Bercegol, Cirelli, Florin, 2019). In this text we will put into question their marginalisation: wouldn’t it be legitimate to think that these workers should be fully involved in the management of waste? A better regulation of the sector could provide a highly efficient solution despite a number of drawbacks, which are partly due to this activity’s relegation to informality by public authorities.

I - Complex system of waste recovery

1. From collection to recycling

The waste recovery sector, despite not being formally integrated to the municipal service, is very well organised in India as it relies on dynamic caste networks from the collection of materials to their segregation and transformation. The waste generated by inhabitants is recovered informally by waste pickers who collect it from house to house (cf. figure 1).

(1) This short documentary film (20min), co-directed by Rémi de Bercegol (CNRS), together with Grant Davis and Shankare Gowda; has been funded by IRD Images, completed par MITI CNRS, it has been shot in February 2019 in and around Delhi. It relies on a scientific understanding of the on-going scenario and aims at opening the debate to a broader non-academic audience about the relationship between societies and waste. Watch it at: <https://www.youtube.com/watch?v=ZROTSb2TRsk>

More info on: <https://www.facebook.com/thecityofwaste>

(2) Most waste pickers are scheduled castes, or “untouchables”, at the bottom of the Hindu cast system. Strictly speaking, they are excluded from the caste system (whose hierarchy is made up of: Brahmins -literate-, Kshatriyas -warriors-, Vahyas -merchants-; and others “low castes”. Officially and contrary to common sense, the Indian Constitution abolishes untouchability, but not caste.

Waste pickers ride their rickshaws (three-wheeled cart) across the capital every morning to collect recyclable materials in large bags and carry them back to the slums³. They also visit individual residents directly to collect the totality of their garbage, hold on to recyclable materials and take the rest to the neighbourhood's municipal collection point (the dhalao). Because of the garbage's impure nature and to the status of the person who handles it, inhabitants usually leave their garbage bin outside their door. Nevertheless, this service is often remunerated by residents (usually around €1-1.50 per household and per month) as it spares them having to carry their garbage to the local collection point themselves. This door-to-door service, although informal, is highly structured and integrated to people's everyday lives. While this collection significantly contributes to the waste disposal process, it is not acknowledged by the municipal authorities of Delhi⁴.

Waste pickers work across the same areas daily and always visit the same houses, based on a schedule set by their tekedar (foreman). Each residential neighbourhood (a "mine of waste", to quote Jérémie Cavé 2015) is split between several buyers/wholesalers (the kabaadiwala) from the slum who then task their employees with collecting the materials, granting them informal rights on a residential plot. Deprived of any legal existence and particularly vulnerable, waste pickers can be chased by the police, sometimes subjected to racketeering, and often abused by some residents. In order to avoid any damaging conflict, the waste pickers secure the agreement of municipal street cleaners (safai karamchari) before accessing an area. They also barter with private security guards to gain access to the gated buildings, and negotiate their collection with resident associations in each neighbourhood where they work. In some cases, the tekedar and the kabaadiwala pay out a financial contribution to facilitate access to the materials, under the condition that the materials are exclusively sold to them by the waste pickers. Concretely, this means that each group of waste pickers is assigned a set number of buildings (ranging from fifty to over a hundred, depending on local arrangements) from which they are allowed collect waste. This system of informal rights is not systematic: there are also independent collectors who gradually manage to "secure" a territory without the support of a buyer, for example like it is the case of Hanuman Mandir Mazdoor Camp, one of the many slum of Delhi (cf. fig 2).

On the above map, the slum of Hanuman Mandir Mazdoor Camp appears at the centre of the collection system of a wealthy neighbourhood of South Delhi. Populated by about 1500 inhabitants, the slum owes much of its population's survival to the daily recuperation of waste generated by neighbouring residential areas within a 2km radius of the slum. The three large kabari-wala of the slum have divided the three informal collection areas into (1) Rama Krishna



Figure 1: a waste picker collecting waste in his rickshaw from a wealthy neighbourhood in South Delhi

Source: screenshot 3min12, film "the people of waste" (Bercegol and al. 2020)

Puram, (2) Safdarjung enclave and (3) Katwaria Sarai, for which they have allocated the exclusive responsibility to groups of wastepickers who have to resell the recovered recoverable materials to them.

Although the exact number is not known, it is estimated that there are at least 50,000 to 150,000 informal waste pickers making their rounds through the city every day. As each picker collects around forty kilos of solid waste, it is estimated that a minimum of 2000 tons of waste collected on average per day (around 20% of the waste generated daily in Delhi). This collection process forms the basis of the recycling system, which feeds secondary materials to the formal industry. The best materials collected from the residents are then selected and sold to a buyer, the kabaadiwala, who sells them to a wholesaler who, after processing the materials, then sells them on as industrial inputs. By this stage, these resources have definitively lost their status of waste materials: they are sorted by type, colour and quality, and are then ready to be dismantled, taken to pieces, cleaned, washed and compacted in order to be either transformed on the spot or resold to the formal sector's recycling workshops that buy this secondary material. The prices are very strongly correlated to the evolutions of the international market of raw materials (Cavé, 2015), which the wholesalers look up on a daily basis in specialized journals. The profit margin per kilo of recovered materials is low – 1 to 2 rupees⁵ between each intermediary – and the only way of securing an income of sorts is to process large amounts of materials. The tools and technologies can vary between places but the workers' skills are evident throughout the process: dexterity, speed and the knowledge of the various components are all crucial to the recovery process. For example in Delhi, the Khatik workers of the PVC market⁶ are able to distinguish between all the various types of plastics. This does not take away from the harshness of their working conditions – repetitive and sometime dangerous tasks, and uncomfortable positions (cf. figure 3).

(5) 75 rupees is equivalent to 1 dollar in June 2020

(6) The PVC Market, located in Tikri Kalan at the North West of Delhi, is a market dedicated to the wholesale reselling of plastics where tons of materials are delivered every day before being sorted, processed and sold on.

(3) According to the definition of the Census of India, the slum category corresponds to a grouping of at least 60 to 70 households, with a minimum population of 300 people, living in insecure housing and an unhealthy environment, with a lack of basic infrastructure such as essential water and sanitation services. In 2011, there are about 13.7 million households living in slums in India, 1.8 million of which are in Delhi, or 11% of the city.

(4) On the opposite of others cities which acknowledged informal collection and intend to formalize it (especially in Latin America, cf. Bogota or Lima; but also in India, with the very famous example of Pune)



Figure 2: territories of waste collection around the slum of Hanuman Mandir Mazdoor Camp (one of the many slums in Delhi involved in waste collection)

Source: Rémi de Bercegol, with support of Marine Frantz (Bercegol 2020)

Focused on her work, women separate plastic materials by hand, based on color and quality. They are 'Kathik', members of a caste traditionally associated with the impure work of tanning. This is the caste that dominates among workers of the emblematic PVC market in Delhi today.

2. Living in the margins

In Delhi, a significant share of the population (cf. note 3) lives in areas considered as illegal or in slums. The economy of waste plays a crucial part in these areas, as it provides the main source of subsistence for a number of households. There is a political micro-economy of waste pre-collection, with clearly structured hierarchies and collection rights. This feeds into a vast material recovery system which, although mostly informal, interacts with the formal and formalized economy as a supplier.

Every residential neighbourhood is thus informally connected to a "marginal" neighbourhood – including slums in the periphery or more central wholesalers' warehouses "established on vacant land or wasteland" (de Bercegol, Cirelli, Florin, 2019). As noted by Bénédicte Florin (about Istanbul), these facilities generate "significant health and environmental externalities on the recovery workers' living and working environment, because by clearing the city centres and wealthy areas from their waste, recovery workers make their own areas and population more vulnerable" (Cirelli, Florin, 2016, p.11), like in many slums in Delhi (cf. fig 4).

In addition, the sites where the sorting and processing activities take place, including the waste workers' homes, generally lack in basic facilities with no access to drinking water and basic sanitation systems. These people live and work in Delhi's most marginal neighbourhoods, which suffer from their negative association with impurity, waste and poverty. Some wholesalers illegally grab a piece of land in the slum to accommodate their pickers. Some of the pickers/employees can sometime be hosted in exchange of the waste they collect for their owner. But most of the time, they

must pay a rent that ranges from 1,000 to 3,000 rupees (€15-45 depending on the house's surface area and on the slum's location within the city).

Marginality is thus materialized by under-equipment and geographic relegation. In Delhi, waste workers have always been pushed out to the margin and into the city's "gaps": the waste is sorted in landfill sites and in the confines of Delhi, in very dilapidated central areas or in the far periphery. Sorting, weighing, packaging and recycling activities take place in almost undetectable in-between spaces: in this sense, waste-related work combines spatial and social marginalization. These living and working places are being gradually pushed away from the city centre and relegated first into the margins and later into the city's remote peripheries.

The spatial marginalization of casteless populations has always existed in India. However, this relegation has been exacerbated by the deepening of inequalities brought about by urban capitalism. While the neoliberal system transforms some spaces to turn them into a showcase for India's economy, it marginalizes others to hide or eradicate them. Recovery workers complain about regular raids by the police who confiscate their rickshaws, a crucial tool for their morning collection. This occurred for instance in February 2019 in Hanuman Mandir, a neighbourhood of waste pickers in the centre of the rich municipality of South Delhi. In more peripheral neighbourhoods, police brutality goes along with physical attacks or even murder attempts: for instance, in June 2018 in Mandanpur Khadar, a nationalist group voluntarily set fire to a camp of Muslim waste workers of likely Bangladeshi origin.

II - The workers and entrepreneurs of the recycling chain

1. Who are the waste workers?

In India, an individual's decision to join this marginalized line of work is strongly correlated to their caste of origin.



Figure 3: women at work at PVC Market

Source: screenshot 6min55, film "the people of waste", (Bercegol and al. 2020)



Fig.4: at home

Source: screenshot 2min 29s, film "the people of waste", (Bercegol and al. 2020)



Fig 5: Incinerator bottom ash and ferrous metals

Source: screenshot 15min00 film "the people of waste", (Bercegol and al. 2020)

Waste pickers have a similar sociological profile: they are either casteless or belong to a lower caste, some of them Muslims. Family and professional genealogies show that waste pickers are often in this profession from father to son, and sorters from mother to daughter. Similarly, belonging to the Dalit caste is inherited from one's parents. However, with the boom of waste caused by urbanization in the 1980-90s, the sector also had to recruit beyond the communities of Scheduled Cast. Depending on opportunities, those can include for instance members of Other Backward Class like trader castes, farm workers or members of religious minorities, and in particular Muslims, an already stigmatised group relegated to marginalised jobs.

In general, pickers are recruited within the wider network of a tekedar, who often comes from the same region. These are usually poor families from the rural regions of Uttar Pradesh, Bihar or Rajasthan. Traditionally discriminated or relegated to menial tasks and field labour, they see this work as an opportunity to significantly improve their living standards and acquire relative financial stability. In recent years, undocumented Bangladeshi migrants have found work opportunities in waste recovery. However, they are relegated to the very bottom of the social ladder of waste recovery: for instance, many of them can be found in landfill sites, rummaging through incinerator residue for pieces of metal (fig 5).

To reduce the garbage buried in landfills, the city of Delhi has chosen to incinerate its municipal waste. After combustion, the remaining incinerator bottom ash still represents a quarter of the initial volume. Theoretically it should be recycled as construction bricks, but in reality this

toxic residue ends up on the landfill, where recyclers continue their work. Using nothing but large magnets, they beat the black ash to extract the ferrous metal, the final recyclable material they can sell to scrap merchants.

Although stigmatized by society and unrecognized by the government, the category of "waste workers" remains a collection of individuals with diverse statuses according to their role and profession. As noted by Bénédicte Florin (2017), recovery workers do not form a homogeneous group: the further down the chain of waste they work, the more relegated and excluded their position. These degrees in the profession are connected to the status of waste: those who do the dirtiest of the "dirty job" (Hughes, 1962, quoted by Florin 2016) are those who work in landfills, where recovery work is particularly tough and dangerous. Fermentation produces methane, forming pockets of highly flammable and explosive gas that can create ground collapses burying the workers and causing fires. Landslides and collapses of hills of waste are frequent, like the deadly incident of September 2017 that was due to a partial collapse in the landfill site of Ghazipur in Delhi. The juice generated by the waste (lixiviat) is loaded with organic and chemical pollutants and heavy metals. These hazards are combined with the high incidence of health risks due to diseases and wounds (Chockhandre et al. 2017). At the Bhalswa landfill site, at about 4 am when the garbage trucks start to pour off their load from the top of the dump, about fifty persons are already present and over three hundred gather there throughout the day: these people live at the margin of the margin, collecting the worst of the detritus. Amongst them are Bangladeshi workers: the most invisible of the invisible, the undocumented who leave in fear of being deported from the country.

2. An increasingly professional sector

At the very top of the social ladder, large entrepreneurs can run one or more sorting and processing factories. Thanks to their ability to adapt to the needs of the formal industry and to their access to lineage-based networks of mutual support, these waste pickers have turned into real entrepreneurs. The most fascinating example is certainly provided by the plastics sector, a material whose volumes continue to grow: recycling materials often include products that have already been recycled. All the activities of the recycling chain are present in Delhi's industrial estates, including the compression of materials into bales, the packaging of semi-finished products bound for the formal sector, the grinding of plastics (bottles, film, etc.) and the production of granulate that is then sold on to national companies. Upward mobility is not accessible to all,

but it is a possibility. The increase in the quantity of waste generated from the 1980-90s has significantly contributed to the progression of some of these workers towards entrepreneurship: some were able to save money, develop their skills, hire workers and buy equipment and vehicles. By gaining access to real estate and investment, some individuals are able to develop their waste recycling activities. Some waste workers acquired workshops that transform materials into semi-finished or finished products before they are commercialized.

A wide range of professions sits between these two extremes: some workers are in charge of collecting waste from homes, others of sorting, washing, grinding, selling, etc. The complex social ladder of “waste workers” mirrors the diverse segments of a “continuum” of activities that connect the informal and the formal sector (Cirelli and Florin, 2015; Scheimberg et al., 2011; Scheimberg et al., 2016). The circulation of materials, money and people thus relies on a “socio-technical continuum” (Jaglin and Zérah, 2010, on basic services in developing countries), rather than on an opposition between “formal” and “informal” (Florin, 2017): waste pickers collect waste on behalf of intermediary buyers (formal or informal) who are in turn connected to entrepreneurs whose business develops through the transformation of garbage into industrial inputs (see fig.6).

These flows of waste from one collection place until factories are drawing the geography of (in) formal recycling processes within the city, like for example like for Hanuman Mandir (see fig 2) from where recovered waste is resold in different markets within the city to finally be processed and recycled in industries (some of them too pollutant being outside the city – see fig.7)

In many instances, the wholesaler acts as an intermediary who manages the transaction of materials between the waste pickers and the industry of recycling. These players play a crucial role in the functioning of the recycling chain: they provide the interface between on the one hand the waste pickers who operate outside the so-

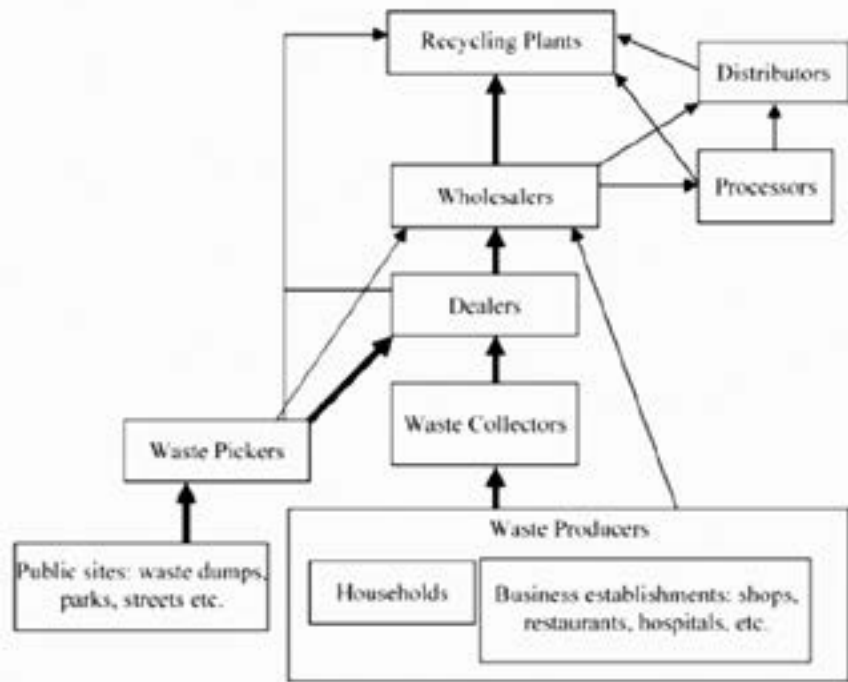


Fig.6: (in)formal chain of waste recycling sector
Source: Rémi de Bercegol

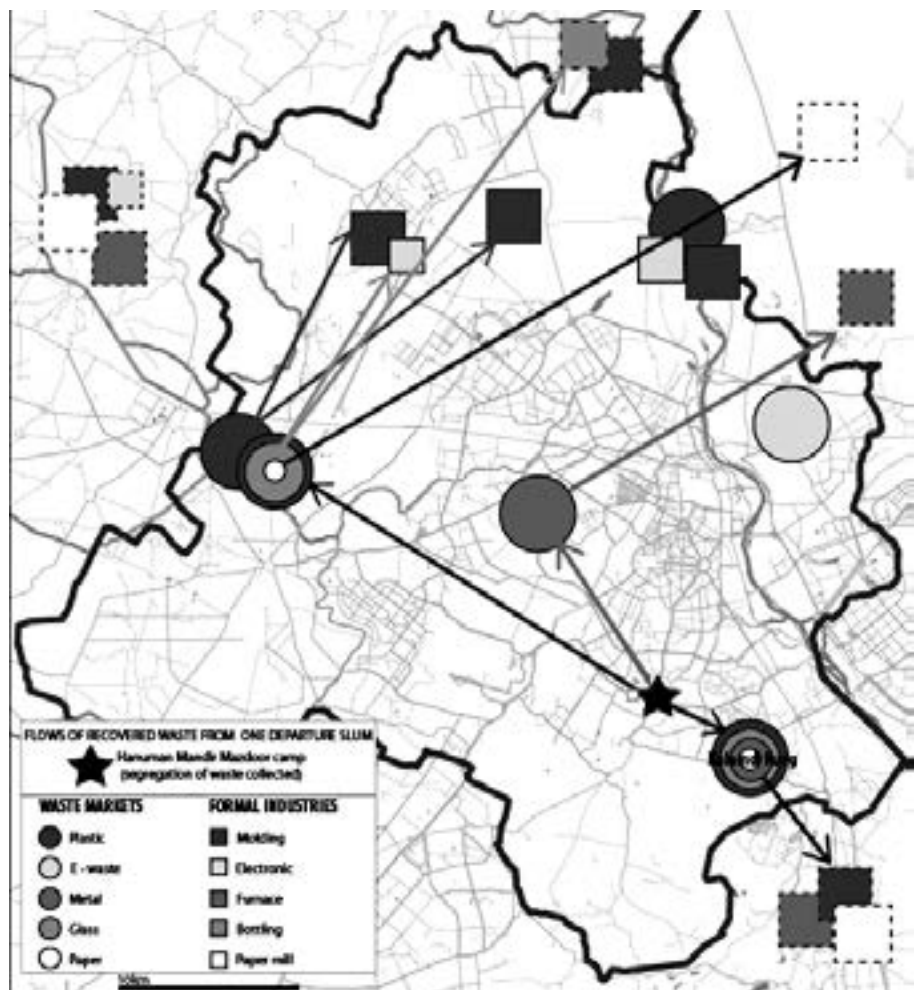


Fig.7: flows of waste in the city from one slum until factories, the case of Hanuman Mandir
Source Rémi de Bercegol and Thi Thanh Huong Pham



Fig8: final product after molding: recycled plastic boxes

Source: screenshot 12min10, film "the people of waste" (Bercegol and al. 2020)

called official waste management system, and on the other the so-called formal economy, by transforming a material – recovered waste – into an industrial input. The hybridisation and interconnection of practices and the mixed management models blur the boundaries, while distinct stakeholders can have interconnected and complementary strategies. For instance, the recycling process ties together the garbage pickers, the buyers, the owners of warehouses where the materials can be stored and the manufacturers. Waste is collected in precarious working conditions, generating a modest income for waste pickers; the materials are then moved on to warehouses where they are processed; they eventually reach retail circuits managed by formal firms at a significant profit (as also noticed in non-Indian contexts by C.Cirelli and B.Florin, 2018, p. 7-8) with the making of the final products (see fig.8)

Conclusion: waste recovery: a neglected alternative

Waste recovery process can function as a circular metabolism where the re-use of secondary materials contributes to significantly reducing pressure on resources. In this context, Southern cities appear as pathfinders: these are cities where "informal" waste recovery systems, considered more efficient than "modernised" formal services, have been established for years (Wilson et al. 2006, 2012), with rag-pickers rummaging dumps and garbage cans in search of materials that can be resold, repaired, reused or recycled. Unlike in the North where this process forms part of an environment-centred approach, waste recycling in the South arises from need. This process provides a breeding ground for a vibrant economy that exists in close interaction with the formal sector.

In this respect, "Asian cities [that] have extensive 'waste economies' (Furedy, 1992) could indicate potential paths of action to tackle the challenge of sustainable urbanisation. In Asia, reuse and recycling practices are deeply embedded in local culture and highly dynamic. The retrieval of used

materials contributes to reducing the pressure on resources while providing a livelihood for scores of labourers involved in the small-scale recycling industries. For Delhi's waste-pickers and Kabariwalla, who operate at the bottom of a vast and hierarchized recycling chain, waste materials are a valuable resource to be extensively exploited. The chain of reuse and recycling, which is only informal at its base (and then connects to formal traders and large industries) is an existing mechanism that reduces resource wastage and contributes to a more circular economy. According to such a de-centered perspective (Chakrabarty, 2000), the urban margins of Southern cities where these recovery industries have developed can be perceived, beyond their poverty, as a source of so far underexploited alternatives and as a model for a genuine circular economy.

Waste-pickers raise an income through waste collection while complementing municipal services in cities where such services are insufficient. However, in spite of their contribution to the community, these activities are only rarely acknowledged. The waste-pickers, who recover the goods that are discarded by other city dwellers, are pushed out to the margins of society. In addition to its lack of social recognition, this alternative is also marginalised by public policies. Recycling remains considered as a degrading job, and waste-pickers are frequently excluded from the restructuring programs delivered through public service reforms, although these programs have a major impact on their practices. Under guise of "modernizing" the sector, rather than using existing local solutions, public authorities favour technical solutions that rely heavily on privatization, to the detriment of informal recovery agents (Bartone, 1995; Baud and Post, 2003; Coad, 2005; Cointreau-Levine, 1994; Nas and Jaffe 2004; Wilson et al. 2006). In Delhi as in other cities, this status quo is symbolized by incinerators: while these are presented as "modern" facilities that can significantly reduce the volume of landfill waste, they can only function correctly if they are fed waste materials with a high heat generation potential such

as plastics, paper and cardboard – the same materials that had traditionally been recycled by recovery workers. Here one of the conclusions of the film is that one should rather think about the “modernisation” and better regulation of the recycling sector rather than investing in incinerators.

Recycling activities will remain a polluting activities if not well managed and should be the focus waste public policies to reach the target of a sustainable urban development and ensure a better social protection of its workers./.

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Bảo tồn giá trị công trình kiến trúc...

(tiếp theo trang 12)

- Đại trùng tu hoặc phá dỡ và xây lại các công trình nhằm tôn tạo các khu phố và cải thiện môi trường xung quanh công trình.

5. Kết luận

Phát triển du lịch là xu hướng phát triển tất yếu của các khu vực vùng núi phía Bắc, đặc biệt là đối với những nơi có giá trị cảnh quan và giá trị truyền thống văn hóa đẹp độc đáo như Sa Pa. Vì vậy việc đề xuất các phương án bảo tồn các công trình kiến trúc trong khu vực lõi đô thị du lịch Sa Pa

trong bối cảnh phát triển du lịch mạnh mẽ tại nơi này đóng vai trò rất quan trọng cho sự phát triển du lịch bền vững của đô thị Sa Pa.

Bài viết trước hết nhận diện các giá trị kiến trúc quan trọng trong khu vực lõi đô thị Sa Pa từ đó đề xuất một số chiến lược cơ bản để bảo tồn hệ thống công trình này. Hy vọng các nghiên cứu này có thể giúp ích cho việc phát triển du lịch của địa phương, cũng như hỗ trợ trong việc định hướng bảo tồn các công trình kiến trúc trước những làn sóng đầu tư ồ ạt vào khu vực./.

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