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THE INFORMAL SECTOR IN SOLID WASTE MANAGEMENT – EFFICIENT PART OF A SYSTEM OR MARGINAL AND DISTURBING WAY OF SURVIVAL FOR THE POOR?

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Abstract

When garbologists start to talk about the informal sector in solid waste management, opinions and solutions vary widely. Worldwide, there are several hundred thousands of waste pickers. Their activities are closely related to recycling, post-consumer waste reduction and, to a certain extent, to environmental protection. There are very few concepts related to how to integrate waste pickers into municipal solid waste reality. Experiences from Latin America, Africa and Thailand show both similarities and differences with respect to the problem, which is much more than a social one. The relation to markets, solutions close to and with the target group, tolerance in legislation and appropriate technologies are all key factors for successful approaches.

1. Introduction

Informal activities in solid waste management have a long tradition and started with the “Lumpensammler” (itinerant waste collectors and buyers) and scrap dealers in the end of the 19th century. Today, several hundred thousand people work in the collection, segregation and processing of recyclables. Thus, they contribute to

- resource use and reuse, returning material as a secondary raw material into industrial production cycles
- increased life span of landfills
- the generation of income for groups of people with a low level of training or education.

GTZ³ (the German Agency for Technical Cooperation) has been working in the context of solid waste management for more than 25 years. The informal sector played and plays an increasing role in almost all projects. This is why the German Federal Ministry for Economic Cooperation and Development (BMZ) commissioned GTZ with a sector project called “Partnerships for Recycling Management⁴”. The aim is to integrate the informal sector into concepts and pilot projects within development cooperation, basing on participation, sustainability and the market economy. The German principle for solid waste management, known as *Kreislaufwirtschaft* (the management of the solid waste cycle) is an important framework for these concepts.

The present paper will focus on three practical examples from German technical cooperation. It will discuss differences between low- and middle-income countries and their priorities with respect to the

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Millennium Development Goals. The first example comes from Mozambique, one of the poorest countries of the world. A second example shows the situation in India with regard to a very particular fraction of waste, the so-called e-waste, which is waste from electrical and electronic equipment like computers, TVs and mobile phones. Example no. 3 focuses on experiences from a medium-sized city in Thailand, called Phitsanulok.

1.1 Characteristics of the informal sector

An operational definition of the term 'informal sector' is difficult to find due to the uncertainty of its boundaries. Usually one resorts to the characterisation of ILO⁵, which emphasizes the following aspects:

- existence of low entry barriers
- utilisation of domestic (local) resources
- predominance of family businesses and child labour
- domination of small-sized enterprises
- use of fairly labour-intensive and adapted technologies
- training for the skills required takes place outside of the formal school system
- utilisation of unregulated and competitive markets.

Occasionally the illegality of certain economic activities is used as a criterion. However, in reality there is usually a range of illegal formal arrangements as well as legal informal agreements. The intersection between informality and illegality might be significant.

The informal sector does not stand isolated next to the formal sector. In fact, it is closely connected to it in various ways through markets for goods and services. For example, numerous formal companies in developing countries are being supplied with cheap intermediary goods or components by the informal sector. Within the waste sector, collectors sell to waste buyers who sell to recyclers.

The rather short-term character of many informal arrangements leads to a latent instability of economic and social relationships, which, for example, is demonstrated by frequent changes of jobs. Even if waste collectors are allowed to work on a landfill, this agreement might change any day, for example after elections, when a new political party takes over the local government.

Definite advantages of the informal sector lie in its extreme flexibility to quickly and appropriately react to changing framework conditions and to understand such disruptions as challenges. Besides this spontaneity, it distinguishes itself through a high degree of creativity, an impressive potential for improvisation and the related specific potential for innovation.

In the 50s and 60s, the informal sector was not explicitly taken into consideration by most governments of developing countries in the development of their policies. This led to widespread discrimination against workers in the informal sector. A result of this discrimination, which to some extent prevails to this day, is the low probability that the incomes of those active in the informal sector are sufficient to cover their and their families' minimum physical and cultural needs. Besides this policy-related discrimination by government and public administrations, those belonging to the informal sector are also subject to economic discrimination – due to a lack of material security, they have no access to the formal market for credit. Therefore, they are almost unable to attain the levels of production that could be expected from consideration of the size of their labour force. In many cases, this discrimination prevents those affected from improving their situation on their own. The situation resembles that of a vicious circle that can only be broken with external assistance.

⁵ ILO: International Labour Organization

In the solid waste sector, many local authorities do not consider the informal sector although it creates very positive impacts such as the reduction of waste requiring disposal, and thereby an increase in the lifetime of a landfill, which means that the controversial process of looking for new site becomes less urgent. Further, material is returned into a productive cycle, which benefits local industries and creates jobs.

2. E-waste recycling in India

The electronics industry is the world's largest and fastest-growing manufacturing industry. Rapid growth, combined with rapid product obsolescence makes e-waste the fastest growing waste stream in the industrialised world. E-waste comprises both valuable materials (such as gold and copper) as well as highly toxic substances like lead and mercury.

The growing quantity of waste from the electronics industry is beginning to reach disastrous proportions. This is due to the lack of protective measures and the inadequate way of dismantling and processing in order to extract valuable components. This can lead to severe health and environmental hazards.

While high-income countries all over the world are beginning to address e-waste as it inundates solid waste disposal facilities, low- and middle-income countries are affected in a way which in most cases they are not yet able to tackle. During the last few years, India and China have won worldwide fame for devastating problems caused by improper handling of e-waste.

In the case of India, almost all dismantling of e-waste happens in the informal sector. Currently, only two companies hold an authorisation for e-waste processing from the Karnataka State Pollution Control Board. India receives huge amounts of e-waste from abroad. Due to the fact that second-hand computers are allowed to be imported, containers with few intact computers and much broken equipment enter the country. Buyers acquire containers at auctions and bring them into a market of small and informal enterprises. Many family enterprises operate in this market. Safety equipment is scarce.



Photograph 1: Indian women working in the separation of computer components

As a first step, GTZ and its partner EMPA (Swiss Federal Laboratories for Material Testing and Research) undertook an assessment of the waste streams in Delhi. Fractions were classified, health and environmental damage was prioritised and market prices in comparison to the processing effort were quantified. The whole investigation was based on a GIS related system, allowing the tracking of waste streams.

In 2004, the Indian government held a national workshop on electronic waste management. The participants concluded that there is a need for proper e-waste management. The two-way strategy comprised a study on national level to learn more about the problem and its extent, and the formation of a working group with members from regulatory agencies, the industry, NGOs, including both experts and recyclers.

In the city of Bangalore, many international and national software companies develop their products at remarkable speed. Computers in the offices are replaced frequently, approximately every 2 years. Large numbers of computers become obsolete. At the same time, the quality standards of some companies do not allow to discharge of old equipment if proper infrastructure is not available. Therefore, some companies store huge quantities of computers. The informal sector does not have the capacity and competence to process computers in a way that complies with the requirements of Indian legislation or international environmental standards.

For the informal sector, these processes appear threatening. If proper e-waste management in the future is to be raised to a highly professional level, it is probable that informal sector processors will have to shift to either illegal activities or another sector.

What role can the informal sector fulfil if a company's environmental requirements demand very high standards that the informal sector will not be able to fulfil? This is the question the HAWA⁶ project in Bangalore, EMPA⁷ and the sector project "Partnerships for Recycling Management" are trying to find answers to. The main answer is advocacy for a group which is just about to start networking. Secondly, training will be necessary so that the environmental and health impacts of certain ways of processing become clear to the informal recyclers. Many lack knowledge about the consequences of unsafe recycling practices. The training will be carried out with local institutions and NGO.

A further step has to be a dialogue with the formal recyclers. What would the supply chains look like? Where are potential opportunities for the trained small recyclers? Step by step, how could they get out of their informal or illegal status?

Recently, the Indian government started to work on a law for the Management and Handling of Waste from Electrical and Electronic Equipment. If the training of members from the informal sector proves to be successful, and if they manage to join their interests with those of the formal recyclers and the authorities, this might allow them room to operate within a future law. This would mean that a formerly informal sector is considered in formal structures. Something similar is in process in Brazil where the informal sector is being included in the current proposal for a new solid waste law.

3. The city of Phitsanulok in Thailand

Phitsanulok is a medium-sized city (of 200,000 inhabitants) in Thailand's Central plains. "Improvement of municipal waste management in Phitsanulok" is a project involving the Municipality of Phitsanulok and GTZ. This project has introduced a sustainable system of waste avoidance, reuse and recycling of municipal solid waste. An important aspect is the close participation of citizens in this approach. The so-called Community-Based Solid Waste Management (CBM) is well known within Thailand and also in neighbouring countries like Laos.

Today, Phitsanulok is a striking example of an integrated approach. Cost recovery rose from 5 % some years ago to 45 % today. The municipality wants to advance and continues to drive the process of involving the private sector in solid waste services such as collection and disposal. In this context, the

6 www.asemindia.com

7 www.empa.ch and www.ewaste.ch

mayor's commitment and continuity has helped develop a very good technical basis, involving both the market and the local authority.



Photograph 2: A waste collector unloading at the Wongpanit solid waste centre

Phitsanulok achieves marvellous rates of segregation of recyclables. Recycling creates jobs and enterprises. The major waste buyer called Wongpanit buys from private persons selling what they have collected in their households, and also from informal waste pickers, buyers and dealers. Prices are indicated openly. He offers small and medium-sized suppliers the chance to become part of his company by joining as a franchisee. In return for paying a fee, this allows the use of the company label and includes a training course. By the end of 2005, this market-driven model had about 180 franchisees and a rising demand.

Table 1: Certain materials are interesting for different types of workers, source: [3]

| Category of worker | Methods of work | Material |
|--|--|---|
| Street pickers | Recovery | Bottles, cans |
| Landfill waste pickers | Recovery | Bottles, paper, plastic bags, cans, other valuables |
| Collection crews | Recovery (en route) | Bottles, cardboard, cans, valuables |
| Itinerant buyers | Door to door buying (announced collector) | Cardboard, plastic bottles, glass bottles, aluminium cans |
| Dealers, neighbourhood dealers or buyers | Buying (retail) | Metal, iron, steel, paper, cardboard, plastic bottles, glass bottles, miscellaneous |
| Small-scale entrepreneurs | Buying, trading | |
| Large-scale entrepreneurs | Buying and large-scale processing technology | |

The case of Phitsanulok is definitely an exceptional one. Informal waste management is highly efficient and the fact that such a high proportion of recyclables is separated before the waste goes to the landfill offers unequalled opportunities. Suchada (2003) indicates that amount of waste to be disposed of at the landfill is reduced by one third [3]. Current estimates are even higher: an engineer at the municipality estimated that 90% of the recyclables are diverted from the landfill.

In terms of informal waste collection, the current system is quite open. There are few waste pickers (about 15) at the landfill. Their income is estimated to be very low, as there is little valuable material left in the waste. "Informal" activities vary from street pickers and collection crews to citizens who keep their waste in the backyard to sell it once a certain amount has accumulated, although they are still

owner of their recyclables, but do not pay taxes. The municipality has a direct benefit from this system as the lifetime of the landfill increases considerably.

Summing up, Phitsanulok shows exceptionally favourable conditions for solid waste management, besides its high level of awareness, a market-oriented system of recycling activities and a high political dedication to the subject

4. The city of Maputo in Mozambique

How can services be extended to all if only 40% of the population currently receive solid waste services? 75% of the citizens live in suburban areas, and 50% live below the poverty line. At the time of the investigation, the collection rate was 40% of the 1.000 tons of solid waste generated each day. A waste fee recovered approximately 46% of the costs. On average, of the 30 vehicles in the fleet, there were some 10 to 15 that were operational.

4.1 Community-based collection services

Community-based activities complement the collection services of the municipalities. The successful experiences of two small community-based enterprises with respect to waste collection in suburban areas (started with external support by “Médecins sans frontières” and Care International) later were transformed into private contractors of municipal services and gave motivation to similar new approaches.

The municipality had not previously contracted out waste collection to private companies. The extension of waste collection into the suburbs of Maxaquene and Urbanização increased the services to approximately 42,500 more citizens, equivalent to 7% more people having a waste collection service.

In the beginning, the municipality did not accept these activities initiated by *Médecins sans frontières* and *Care International* and which later were continued by GTZ. Institutional arrangements were modified so that local companies could be contracted, and in 2004 contracts were signed between the Municipality of Maputo and the small service providers. The primary collection services have been recognized as “best practice”. An evaluation of the efficiency showed that, besides small deficiencies in management, both approaches were suitable for the local conditions. In Maxaquene A, a group of elderly women were cleaning the market. They worked quite slowly and in half-day shifts. In Urbanização, a rigid supervision system ensured the good quality of the service. Some problems were experienced with containers provided by the municipality.



Photograph 3: Solid waste collection in Urbanização, a district of Maputo

4.2 PROREPLA – a recycling project in Maputo

How can recycling be promoted if there is little industry to sell to? This was the main question when surveying the feasibility of a pilot project in the recycling sector in the capital of Mozambique with its 2 million inhabitants. Market research and several interviews with owners of local small and medium-sized companies suggested that plastic offered the best opportunities for recycling. Many fractions were exported to foreign countries (paper and cardboard to South Africa, metal and scrap to India). This was considered not to be useful as the project's success would be dependent on too many external factors. The concept was developed in close cooperation with the private sector (several small and medium-sized enterprises involved in plastic production), the public sector (solid waste department) and workers from the landfill in Maputo. AGRESU⁸ supported the dialogue and contributed studies, which examined the economic and market situation of several recyclable materials.

A small business plan was made. The technical concept included a workshop where waste collectors who used to pick on the municipal landfill would work. After a phase of training in technical and entrepreneurial skills and on-the-job training provided by the industry, the workers bought plastics from the waste collectors, and processed by cleaning and segregating it. Then, the associated plastic companies collected the material. The market price was higher for pre-processed material than for the untreated material. The break-even for cost recovery was calculated to happen after six months. Income will reach the 1 US\$/day that the Millennium Development Goals (MDG) define as the minimum income to avoid absolute poverty. This would be three times the income that the collectors had earned working an 8-hour shift as pickers on the dumpsite. (Mozambique is currently number 7 in the ranking of least developed countries in accordance with the Human Development Index (HDI) which is a composite index measuring deprivations in the three basic dimensions captured in the human development index - a long and healthy life, knowledge and a decent standard of living.)

A commission was established to serve as a council for PROREPLA. In it all actors have one vote to make important decisions for the project. Each partner contributes with what is defined to be his/her task, and gains what is needed to meet his or her specific needs – the municipality is interested in a cleaner city, and industry seeks better secondary raw material in large quantities for plastic production. The informal sector is interested in improving both income and working conditions.

This project exhibits a series of good characteristics needed for a sustainable operation. All relevant partners are included, and the participants are aware of the most probable risks.

5. Assessment of challenges and limitations

Refuse collection is a municipal responsibility. Almost all low- and middle-income countries have informal waste collectors. Almost no country has national guidelines or policies towards informal activities in the waste sector. Only where informal waste collectors are organised is there any formalised concern for their interests. Brazil currently has a strong movement of the waste collectors (MNCR), which reached the stage where it is being considered in the proposal for a new SWM law. Policies need to be formulated and implemented on a municipal level, policies which include one of the most striking social issues: the integration of the informal sector.

For decades, projects which had a focus on the welfare of poor, usually neglected the entrepreneurial approach. Market situations vary from one country to another. A very modern and successful strategy, like the franchise experience from Thailand, would not be easy to realise in Mozambique where markets are still very small and fragile. Cooperation projects or help from local authorities need to be based on give and take in a sustainable way: social, environmental and economic aspects must be considered. If

⁸ AGRESU: Apoio à Gestão de Resíduos Sólidos Urbanos (Support to Urban Solid Waste Management) name of the cooperation project with GTZ in Maputo

the motivation of assistance is restricted to doing something good, there is the risk of those funds being the first to be cut when financial bottlenecks occur.



Ways of cooperation between the private informal sector, the private formal sector and public sector can carry a very symbolic meaning, which can mean a lot to the waste collectors. The experience of Brazil is interesting: the waste workers were accepted by the labour ministry as a professional group, and have a right to receive certain social services from the state. This acceptance means more than the formal act, expressing that the “dirty and poor” belong a little bit more to society, and that their status is no longer semi-illegal.

If modification processes are started within municipal solid waste management, it is recommended to integrate rather than exclude representatives of the informal waste collectors. In Cairo, the Zabaleen were not considered in the early stages of private sector participation, and difficulties arose when these two parties were in competition for waste.

Informal activities in waste management can be included in municipal strategies of waste management, for example in a master plan. Feasibility can be tested at community level. A better adjustment would mean higher efficiency, and frictions could be reduced. The informal sector can be integrated at different points of the system according to the specific circumstances of a city, in collection, transport, sorting etc. At present, most organizations or municipalities do not integrate informal sector waste workers in their policies or programmes. Integrating them would mean a sustainable and significant improvement of solid waste management – less need for trucks and personnel, a longer life for sanitary landfills, creation of jobs for untrained people, reduction of poverty, prevention of contamination, improved conservation of natural resources and a better supply of cheap secondary raw material and in consequence a better environment.

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