



## Recovering resources, creating opportunities

Integrating the informal sector into solid waste management

## Imprint

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH was formed on 1 January 2011. It brings together the long-standing expertise of DED, GTZ and InWEnt. For further information, go to [www.giz.de](http://www.giz.de).

Articles written by named authors do not necessarily reflect the views of the editors.

Published by:  
Deutsche Gesellschaft für  
Internationale Zusammenarbeit (GIZ) GmbH  
Postfach 5180  
65726 Eschborn/Germany  
T +49 61 96 79-0  
F +49 61 96 79-11 15  
E [info@giz.de](mailto:info@giz.de)  
I [www.giz.de](http://www.giz.de)

Sector Project Recycling Partnerships

Responsible:  
Sandra Spies

Authors:  
Ellen Gunsilius, Sandra Spies, Sofía García-Cortés, Martin Medina, Sonia Dias, Anne Scheinberg, Wael Sabry, Nader Abdel-Hady, Ana-Lucia Florisbela dos Santos, Silvio Ruiz.

Editors:  
Ellen Gunsilius, Sandra Spies, Sofía García-Cortés

Contact person at the Federal Ministry for Economic Cooperation and Development:  
Franz Marré

Illustrations:  
© Kirsten Reinhold, [www.kommunikationslotsen.de](http://www.kommunikationslotsen.de)

Layout:  
Roger Krichbaum, GIZ

Printed by:  
Aksoy Print, Eppelheim

Eschborn, March 2011

## Contents

List of Abbreviations	ii
Preface	1
Executive Summary	2
1 Introduction	4
2 The informal sector in a modern, integrated, sustainable waste management system	5
3 The informal sector – a driving force for recycling management	8
3.1 Definition of the informal sector	8
3.2 Working conditions of the informal sector	13
3.2.1 Child labour	13
3.2.2 Income	14
3.2.3 Social aspects and stigmatisation	16
3.2.4 Health and safety	17
3.3 Importance and contributions of the informal sector	19
3.3.1 Social benefits of integrating informal waste management activities	19
3.3.2 Potential contributions to the resource economy	22
3.3.3 Potential contributions to climate protection	24
4 Integrating the informal sector: approaches, examples, impacts	25
4.1 Policy making for the informal sector	25
4.1.1 Action learning and scenario modelling	25
4.1.2 Integration of IS in waste management planning	27
4.1.3 Feeding pilot experiences into national policies and legislation	30
4.2 Strengthening the organisational capacities of the informal sector	30
4.2.1 Benefits of organisation	32
4.2.2 Common ground for organising: trust-building and a shared vision	33
4.2.3 Inclusive, flexible and transparent design of IS organisations	34
4.3 Strengthening the informal sector as an economic actor	35
4.3.1 Business management	35
4.3.2 Diversification of activities and technical specialisation	37
4.3.3 Formalisation	38
4.4 Partnerships between the informal and formal private sectors	39
4.5 Some recommendations for measures to integrate the informal waste sector	44
5 Conclusions and Outlook	45
References	47



## List of Abbreviations

AFR	Alternative fuel resources
ANR	Asociación Nacional de Recicladores Colombia
ARB	Asociación de Recicladores de Bogotá
ASMARE	Waste pickers' association of Belo Horizonte
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Cooperation and Development)
CSD	Commission on Sustainable Development
CSR	Corporate social responsibility
CWG	Collaborative Working Group on Solid Waste Management in Low and Middle Income Countries
EU	European Union
EWA	E-Waste Agency India
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ILO	International Labour Organization
IS	Informal Sector
ISP	Informal service providers
IWS	Informal waste sector
ILO	International Labour Organization
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau (German Financial Cooperation)
KKPKP	Kagad Kach Patra Kashtakari Panchayat (waste picker union in Pune)
LAPWN	Latin American and Caribbean Network of Waste Pickers
MBO	Membership-based organisation
MDGs	Millennium Development Goals
MNCR	National Movement of Waste Pickers in Brazil
NGO	Non-governmental Organisation
PNAD	Brasilian National Household Sample Survey
SWM	Solid Waste Management
SEWA	Self-employed women's association
PFD	Process Flow Diagram
PNAD	National Household Survey Brazil
PROCOMER	External Commerce Promotion Centre in Costa Rica
RAIS	Annual Listing of Social Information
SIMA	Small Industries Modernisation Association Egypt
SME	Small and Medium Enterprises
UCLA	Uswag Calahunan Livelihood Association, Iloilo
UNEP	Unites Nations Environment Program
WARM	Work Adjustment for Recycling and Managing Waste
WIEGO	Women in Informal Employment Globalising and Organising

## Preface

The Solid Waste Management sector has recently been re-discovered from a resource management perspective. In times of decreasing availability and increasing prices for raw materials, the “anthropogenic resources” contained in waste, become economically interesting. Private enterprises increasingly see waste as a commodity to which they seek to secure access. In various countries, discussions about recovering resources from landfill sites and out-of-use buildings and equipment, also described as “urban mining”, have arisen. The approach to solid waste management in German development cooperation follows the lines of the “waste hierarchy”: reduce, reuse, recycle, recover energy and dispose of waste reflects the order of the priorities. This approach is an important element of a more sustainable economy which is not primarily based on the exploitation of natural resources, but on an efficient use of resources and their recovery in the productive cycle. The recently published UNEP Green economy Report highlights solid waste management as one important sector on the way to a green economy.

The informal waste sector, especially vibrant in low- and middle income countries, can teach us a lot about this perspective. It recovers much larger amounts than the formal sector. These actors, despite their marginalised position and their simple equipment, often recover up to one third of the waste in a self-financing way. However recycling rates are needed. One way to improve resource and energy efficiency in industrial production is the informal sector integration. But this sector can only develop its full potential for recovering resources from waste if it is recognised, integrated and supported to establish more efficient processes.

Not only resource recovery, but also many other basic developmental goals can be served by establishing partnerships with informal waste collectors and recyclers. By recovering more resources from waste and disposing of less waste, environmental harm can be reduced. Improved equipment and processes can reduce health risks to which informal workers and also surrounding populations are exposed to. These workers often belong to the poorest parts of the population. Organising and integrating the informal workers into existing solid waste management systems can secure employment and improve their income opportunities. A circular waste

management system adapted to the conditions in low- and middle-income countries can thus not only contribute to a green economy and to resource efficiency, but also to the achievement of the Millennium Development Goals (MDGs).

The experiences presented in this report show that the integration of informal workers in solid waste management systems is possible and that it can contribute significantly to development objectives. Therefore, it is important that the current and potential contribution of the informal workers be analysed in processes of reforming solid waste management systems. They should be taken into account in waste management planning, designing infrastructure and establishing partnerships for efficient waste management. German international cooperation’s experiences can offer helpful indications for approaches and measures that facilitate a successful and sustainable integration of informal stakeholders in integrated solid waste management.

Franz Marré

Federal Ministry for Economic Cooperation and Development (BMZ)

Head of Division 313: Water, Energy, Urban Development, Geo-Sector

## Executive Summary

Informal stakeholders are active in solid waste collection and recovery all over the world, sometimes for centuries already. They work as waste collectors, collectors of recyclable materials in the streets or as waste pickers on transfer stations and dumpsites.

The present publication summarises the results of the GIZ Sector Project “Recycling Partnerships”, which analysed the effects and integration potential of informal activities into solid waste management (SWM) on behalf of BMZ. After a short introduction, the role of the informal sector in a new, integrated solid waste management is described in chapter 2.

Chapter 3 presents the activities, working conditions and significance of this sector. It is shown that informal waste workers often represent a significant portion of the urban population in low and middle-income countries and that they constitute an important element in the value chain of resources by recovering valuable materials from waste. Their work is characterised by low entry barriers, low organisation levels, and irregular income situation. Working conditions are often bad, exposure to health risks is high, child labour is common, and there is a high vulnerability to unfair business relations due to the precarious income conditions of the workers. Informal actors are mostly not officially recognised or charged with solid waste management, and are often ignored or restricted by responsible authorities for solid waste management.

The informal workers in SWM have a different vision of solid waste than formal service providers, as their primary interest is to recover valuable materials, and not to collect and dispose of waste to reduce health hazards and as a service. Therefore, informal actors contribute significantly to recovery and recycling of waste in a self-financing system. The integration of the informal sector into formal solid waste management systems can contribute to reduce overall system costs, to support the local industry by providing low-cost materials and to create new jobs. On the other hand, it can reduce negative environmental and climate impacts from solid waste management through improved resource recovery and reduced disposal. And finally, it can help to generate income and improve working conditions for poor populations who often do not have other economic opportunities.

When the potential benefit of informal sector integration is recognised, the question arises how best to realise this integration. Chapter 4 presents approaches to informal sector integration based on GIZ pilot project’s experiences and other organisations’ activities. Municipalities, informal sector organisations and development cooperation organisations such as GIZ have acquired experiences during the past years about success factors for integration approaches to make integration models sustainable. A mix of several approaches seems to be most promising. It comprises first taking into account the informal waste sector in policy making and solid waste management planning. This can be facilitated by approaches such as action research establishing the impact of the informal sector and the development of scenarios about informal sector integration, developing impact hypotheses on informal sector integration in planning processes and through an adaptation of infrastructure design as to make resource recovery through informal workers possible. GIZ pursued this approach in successful projects in Mozambique, Costa Rica and the Philippines.

Another important element for successful integration is the establishment of stable organisational structures. Co-operatives, small enterprises and networks in Brazil, India, and other countries show that the organisations were the first step to get informal workers out of social marginalisation, improved their economic efficiency and thus their position in the economic value chain and made partnerships with municipalities and other stakeholders possible.

The focus on entrepreneurial spirit and strengthening the informal sector as an economic actor is a key topic for the support to the informal waste sector. Due to its low social status and low education, they need particular training and information, on health issues as well as management methods and technical expertise to upgrade their recovery activities and be able to conclude business contracts. But support activities should not be limited to improve the social conditions of informal waste workers, but be aimed at establishing business activities that are economically viable over the longer term. This is important to prevent that informal workers’ co-operatives cease operation once the external support comes to an end.

Finally, partnerships among the private sector, between formal and informal actors, become more and more important. Many private enterprises perceive the opportunities stemming from the use of waste as a (material or energetic) resource and realise that they can benefit from partnerships with the informal sector in order to improve the value chains related to materials from waste. Some successful examples for a more organized resource recovery through informal stakeholders have been initiated by GIZ, for example the cement producer Holcim or the steel producer Gerdau.

Chapter 5 draws a number of conclusions from these experiences, stressing the need for taking into account the informal waste sector at international, national and local level, as well as the potential contributions of partnerships between public, formal private and informal private stakeholders for a green economy.

## 1 Introduction

Waste pickers, catadores, pepenadores, chiffonniers, récupérateurs, scavengers ... all these are names for people who make a living on waste in an informal way. Informal means that they have no contract, no regular income, rather simple equipment to work with, little recognition and high vulnerability. It is estimated that up to 2% of the urban population in low- and middle-income countries work in the informal waste sector. Informal workers in solid waste management (SWM) are often ignored or seen as hindrances to efficient waste management processes. It is little known that these informal actors often contribute significantly to resource recovery and recycling of waste materials and can thus have a very positive impact on waste management systems, especially in low and middle income countries.

The present publication is the result of the GIZ Sector Project “Recycling Partnerships”, carried out on behalf of BMZ, which analysed the effects and integration potential of informal activities in SWM between October 2003 and March 2011. The sector project conducted studies and disseminated information about informal waste management activities,

facilitated partnerships between stakeholders and supported pilot projects designed to integrate the informal sector. Experiences from countries that have a long history of informal sector involvement in waste management, like Brazil, India and Egypt have been analysed. In addition, the sector project supported pilot activities like trainings, the inclusion of informal stakeholders in planning processing or the setup of new recycling activities.

The publication aims to outline the role of the informal waste management and recycling sectors as well as successful approaches of integrating informal workers into official solid waste management systems.

The publication is a collaborative effort including contributions from various researchers and practitioners with particular expertise in informal waste management activities and presentations in which informal workers describe their experience and priorities. We thank all those who contributed their experiences and their expertise for this report.



Living on Waste: Ghazipur Waste Dumpsite in New Delhi, India (Photo: Ulrike Killguss)



## 2 The informal sector in a modern, integrated, sustainable waste management system

By Anne Scheinberg, WASTE

The GIZ study on economic aspects of the informal sector in 2006 and 2007 (Scheinberg, Simpson, Gupt et al., 2010, see also chapter 3.2.2 and 4.1.1) set off a kind of global chain reaction on the need for ways to understand and benchmark waste management systems in low- and middle-income countries. The study was created in part to respond to the question: what is really the future of waste management in low- and middle-income countries? Is it only to strive to be a poor shadow or an imperfect copy of the system in place in the North? Or do we have a chance to really understand the strengths of the private informal and formal sector actors in these countries, and to analyse the unseen and poorly understood processes by which informal entrepreneurs actually keep their cities' waste systems operating.

In most developed countries the origin of the recycling industry is to some extent related to the origins of solid waste management (see, for example, Melosi 1981). Urbanisation in the 19th century provided livelihoods for rag-pickers, night soil and ash collectors, and other urban gleaners, who could remove unhealthy waste materials and commercialise them by selling them into the growing industrial and agricultural value chains. In the late 1800s, under the influence of political panic associated with large-scale cholera epidemics, this activity became increasingly focused on maintaining sanitary conditions, and solid waste management gained the public works focus which it maintains to this day.

This increasing professionalisation of solid waste management in the 20th century resulted in separating the development of solid waste management systems from recycling activities (Strasser 1999, Wilson 2007). Environmental insights stimulated engineers in large European and North American cities to refine a range of new technical approaches to disposal which moved the two disciplines even further apart (Wilson 2007; Scheinberg, Wilson and Rodic 2010). While for most of the 20th century recycling systems operated as part of the industrial supply chain, they moved further and further away from the public service of waste management (Scheinberg, 2003; Gille, 2007; Weinberg, Pellow and Schnaiberg, 2007).

The post-Earth Day discipline of environmental management and resource conservation stimulated a new solid waste modernisation process which began to bring the two disciplines back together. Resource conservation in particular served to turn the attention of waste managers in the direction of recycling. Thus it can be said that modernisation of waste management represents a return to an improved – and updated – version of an older paradigm. The waste systems which had evolved to have a single technical idea – remove waste from populated areas and dump it on or bury it in some unused or far-away ground – are shifting towards deconstructing waste streams and looking for appropriate intermediate or final destinations for all the different components, according to their sources, value, and physical nature (Scheinberg 2003, Scheinberg, Wilson and Rodic 2010, Saarikoski 2006).

In developed countries the main public sector motivation for a renewed interest in recycling is its value for environmental protection and resource conservation. The further integration of recycling into municipal solid waste management – often referred to as 'Integrated Solid Waste Management' – significantly raises the importance of keeping materials out of disposal and directing them to valorisation, that is, to diversion from disposal into the industrial value chain for reuse and recycling, and the agricultural value chain for composting and related uses. In high-income countries, recycling increasingly has become not only a practical strategy in response to rising disposal costs and growing waste streams of increasing toxicity and complexity, but also a symbolic antidote to 'over-consumption' and the throw-away society (Pellow, Schnaiberg and Weinberg 2000).

In low- and middle-income countries recycling can be distinguished from solid waste management in that it is not a service of cleaning or removal, but a largely private economic activity based on valorisation and trading, with strong direct links to the industrial sector and hundreds of years of history (Scheinberg 2003; Gille 2007; Melosi 1981; Strasser 1999). Specifically, private recycling has little or no relationship to the primary activity in waste

management (and sanitation), which is removing waste (or excreta, both 'economic bads') and minimising their nuisance, environmental or health impacts (Cointreau 1989; Scheinberg, Wilson and Rodic 2010).

In contrast, recycling in not-yet-modernised solid waste systems has the opposite goal: to extract any remaining economic or use value from the 'economic goods' that end up in the waste stream, to prevent their removal and disposal, and to 'valorise' or commercialise them through aggregating quantities, removing contamination, sorting by grade or type, storage, transport, and marketing. Recent research for UN-Habitat (Scheinberg, Wilson and Rodic 2010) suggests that informal recycling may already be recovering 15-35 percent of generated waste in cities in low-and middle-income countries (Scheinberg, Wilson and Rodic 2010)<sup>1</sup>. In these cities, recycling forms the livelihood of hundreds, sometimes thousands of individual and family-based entrepreneurs, who form the base of the recycling supply chain pyramid (Chaturvedi 2008, IFC 2008, Simpson-Hebert, Mitrovic and Zajic, 2005).

<sup>1</sup> Based on research in 20 high-, middle, and low-income countries for UN-Habitat in 2010, and the six cities reported on in this study. The range is large and depends, among other things, on how cities divide the waste stream between household (hh) waste, commercial and industrial waste; construction and demolition waste; agricultural waste, and other streams. Moreover, cities measure amounts of waste at different points and in different ways; these percents follow the cities' own claims and ways of measuring.

Over the past two decades we see a modernisation process entering urban centres in low- and middle-income countries, where practices and systems of integrated solid waste management common in Europe, Australia, North America, and Japan are introduced as global best practice into the formal waste sector. Modernisation and its globally driven ideals make it more and more difficult for informal entrepreneurs to have access to waste materials that they can valorise and live from. The global commons into which the waste materials are disposed is shrinking. Cities in the process of modernisation assign rights to recyclables to their formal private sector partners as a way of offsetting the costs of operating their modern, over-priced waste systems. They look for 'buyers' for 'their recyclables,' not thinking that these recyclables are already claimed through the informal base of the pyramid that is the recycling value chain.

In the informal sector study, Waste and its partners began by modelling informal and formal systems separately, to begin to understand how formal waste systems driven by a modernisation agenda might interfere with and threaten the largely informal recycling systems in the urban centres in low and middle-income countries. They found, first of all, that separating informal and formal on the one hand, and waste and recycling on the other, is simply not possible. The systems cross each other in every possible way, and are so thoroughly interwoven that any



Waste Management from a new perspective: Waste as Resource

intervention anywhere in the system will affect all parts of it. Solid waste management is not a set of unconnected parts, it is a highly dynamic system with deep connections between parts.

Thus the introduction of EcoRom formal recycling in Cluj-Napoca, Romania, the only European city in the study, could have two or more results. Under EU pressure to reach recycling targets, EcoRom, a national agency, could seek to maximise revenues by bypassing the informal door to door system and reduce the quality and quantity of recyclable materials accessible to the informal community living in the slum called “Dallas.” At the other end of the spectrum, it could co-operate with the informal sector and support their activities, which maintains levels of recycling but does not improve the waste system nor does it put money into the municipality. What the study told them is that the first alternative, while it seems institutionally simpler, is actually quite shockingly expensive, because without broad public involvement in separating at the source, it captures only a small quantity of materials, making the cost per ton very high. In contrast, the informal systems cost little per ton, move quite a lot of materials, but fail to address issues of working conditions, child labour, and rent-seeking behaviour of private companies and the police who prey on informal entrepreneurs. A truly modern way of thinking seeks above all to combine these two approaches, so that the experience and knowledge and efficiency of the informals contribute to the effectiveness and marketing access of the formal system. In low- and middle-income countries, this kind of hybrid “integration” approach has significant economic and social benefits. The ideal is a mixed, pluralistic combination of high- and low-technology treatment and collection, private, public, formal, and informal actors, and local and global practices.

Analysing the paths of materials in process flow diagrams (PFD) reveals transactions and relations between different stakeholders, and relations between formal and informal systems. Information on mixing and parallelism are important entry points for improvements. The Lusaka PFD shows that what appears to be a 30% loss of Lusaka’s waste (to be seen at the lower left part of the PFD) does not in fact leak into the environment, but is collected by informal service providers – most of whom bring it to the formal dumpsite at Chunga. Understanding this fact was

*“Words and labels can be important in governmental perceptions. For example, the PFD for Lusaka shifted the perception of key stakeholders. They changed from calling the ISPs in that city “illegal collectors” to “unregistered informal collectors”. This was reported to have played a role in shifting perceptions, and stimulating informal recognition and more favourable policies.”*

Scheinberg, Wilson, Gupta, 2010 Annex 6, Lusaka City Report, and the Addition Scenario Workbook

a by-product of Lusaka’s participation in the study, and influenced the city’s attitude towards – and recognition of – the Lusaka informal service providers (ISPs).

[...] Since the main period of field work in the study, several of the cities have contributed insights from the study to the national policies on the informal sector. Quezon City’s researchers at the Solid Waste Association of the Philippines pushed through a law requiring the integration of informal recyclers in waste systems. The study contributed to informal integration initiatives and modification of existing plans in favour of more integration and better protection of waste pickers in Lima, Peru, Pune, India and Lusaka, Zambia. After years of being ignored by their governorate, the Cairo Zabbaleen – in spite of the setbacks of privatisation in 2002 and the loss of their swine in 2008 – have achieved some measure of recognition, and are using opportunities to seize the lead in introducing source separation. As this publication went to press, the Zabbaleen seized the opportunity to become the clean-up crew for the ‘Egyptian Revolution’ in the Tahrir Square in Cairo – and also to educate their countrymen and women on source separation.

There cannot be sustainable, fair, or even effective modernisation of the waste management sector in South cities without the informal sector. While those who started the sector project suspected this, the informal study has now produced real information that backs this up.

## 3 The informal sector – a driving force for recycling management

### 3.1 Definition of the informal sector

#### The Informal Waste Sector

By Dr. Martin Medina, researcher specialised on the informal waste sector

Informal economic activity has been the focus of intense debate among scholars for nearly four decades. Hart (1973) is credited with coining the term 'informal' referring to the income-generating activities of the urban poor in Ghana. According to Hart, the distinction between formal and informal income opportunities relied essentially on that between wage earning and self-employment. However, subsequent studies conducted in several countries have shown that some workers are employed by informal businesses. Also, Hart did not offer criteria by which the self-employed in the informal sector can be distinguished from those in the formal sector (Davies, 1979).

Empirical studies have demonstrated the importance of the informal sector in the economies of developing countries. In the late 1990s, informal employment accounted for 48% of non-agricultural employment in North Africa, 51% in Latin America, 65% in Asia, and 72% in sub-Saharan Africa. If agricultural employment is included, the percentages rise, in India and many sub-Saharan African countries, beyond 90% (WIEGO, 2000). Economic crises have a direct impact on the informal economy: the urban informal employment in Mexico declined slightly from 37.4% of the labor force in 1950 to 35.8% in 1980 as the country's economy grew. However, in 1995, as a result of the economic crisis and the Mexican peso devaluation, informal sector occupations employed 18 million Mexicans, or 51% of the labor force. Thus, 50% or more of the urban working population in developing countries labors in the informal sector (Zúñiga, 2003).

In the second half of the 1990s many scholars started to use the term "informal economy" instead of "informal sector" to refer to a broader concept that includes enterprises as well as employment in developing, transition, and advanced developed economies.

The ILO defines informal waste workers as "individuals or small and micro-enterprises that intervene in waste management without being registered and without being formally charged with providing waste management services." The World Bank has estimated that up to 2% of the urban population in developing countries makes a living in the informal waste sector (IWS for short). Thus, the IWS provides an income to at least 15 million people worldwide. The IWS has an economic impact of several billion US \$ a year (Medina, 2007).

#### Main Activities

The IWS includes the following categories of activities related to solid wastes:

- 1) Informal waste collection – In some areas, often low-income neighborhoods not served by municipal waste collection service, entrepreneurs provide this service. Informal collectors charge a pick up fee to residents. Collectors use pushcarts, donkey carts, horse carts and motorized vehicles to transport the waste. Sometimes collectors recover the recyclables in the waste and sell them for reuse or recycling. In some cities, informal waste collectors serve a significant part of the population. Male, capital of the Maldives, lacks municipal waste collection, and informal collectors provide this service to most of the population in the city. By combining waste collection and recovery of recyclables, people engaged in this can earn high incomes. In Ciudad Nezahualcoyotl, near Mexico City, informal collectors earn five times the minimum wage, which is more than factory workers (Medina, 2005).
- 2) Informal recovery of recyclables – This is the most common activity in which people recover materials from waste for reuse or recycling. In English-speaking areas they are known as scavengers, waste pickers, rag pickers, salvagers, reclaimers, or other terms. Many other words are used to denote this activity, depending on the country and language. Recovery activities occur in any area

where waste accumulates, such as on the streets, vacant land, bodies of water, open dumps, and landfills. In recent years and in many countries, incorporation of waste pickers in recycling programs that involve separation at the source are becoming more common. Many people engage in the recovery of recyclables as a full-time activity, but others do it part time, while still others recover recyclables as a side activity to increase their income. For example, municipal collectors in many cities salvage recyclables during their waste collection routes.

- 3) Manufacturing activities – Some enterprising individuals or groups engage in manufacturing activities that use materials recovered from waste as raw materials. By adding value to waste materials, they can earn higher incomes than just recovering and selling recyclables. A wide variety of items are manufactured from waste, such as pots and pans made from melted Aluminum cans, roof tiles from plastic waste, and cleaning mops made from textile waste. The transformation of organic waste into compost also falls into this category.
- 4) Provision of services – Individuals or groups can also engage in the provision of waste management services. The most common services provided are street sweeping and cleaning of facilities such as bus stations.

Categories 1 and 4 have limited links to the formal economy. Categories 2 and 3 show direct and strong backward and forward linkages to the formal economy. The informal recovery of recyclables can even be linked to the global economy if the materials are exported to other countries in order to be recycled there (Medina, 2007).

There can be large variations in earnings and working conditions within each category and between categories. In general, however, diversifying from the recovery of recyclables, adding value, providing services, and participating in source-separation programs, all tend to increase the earnings of the

individuals involved. Perhaps the worst conditions for the recovery of recyclables occur at the open dumps, due to the unsanitary conditions that people have to endure to work in these places.

#### Characteristics of People in the Informal Waste Sector

Our qualitative knowledge of the IWS is far better than our quantitative knowledge. Most of the studies on the IWS have been conducted by Anthropologists and other Social Scientists that use mostly qualitative research methods. Thus, we lack reliable data and statistics on this population. We do know, however, that a significant percentage of people involved in the IWS have the following characteristics:

- \* They are recent migrants, often from the rural areas, or from neighboring countries
- \* Child labor is common in the IWS, often working with their parents in family units, recovering materials, guarding them, sorting or cleaning them
- \* Women of all ages participate actively in the IWS. Sometimes women are forced into the IWS when their husbands die and they lack other sources of income
- \* Laid off workers comprise an important part of the IWS population
- \* Elderly individuals of retirement age that either do not receive pensions or the pensions they receive are insufficient for their needs
- \* Disabled individuals unable to find regular employment

Thus, the IWS population can be characterized as highly vulnerable, particularly women and children. Despite the millions of people worldwide that make a living in the IWS and their economic impact of several billion US dollars each year, it is still a neglected and understudied population.

The term “informal sector” is used here only in relation with activities which are connected to SWM. They are not formally charged with the provision of the services which they provide, and no contract exists between self-employed workers and enterprises of the informal sector and the local government. These enterprises are not registered and they work without licenses. IS enterprises do not pay commercial, income or any other type of taxes and they do often not consider legislation on employment and environmental protection.

Corresponding to the definition of ILO, the informal sector shows the following basic characteristics:

- Existence of no or very low entrance barriers;
- use of local resources;
- mainly family enterprises or self-employed individuals;
- mainly small enterprises;
- use of relatively labour-intensive and adapted, local technologies;



Woman on dumpsite, Mozambique (Photo: GIZ)

- acquisition of required skills outside of the formal schooling system;
- unregulated markets with high competition;
- no access to (public) social security schemes and
- low income and low level of organization (unions)

These characteristics explain why, especially in the informal waste management sector, the numbers of persons often grow significantly during economic crises. Low entrance barriers make informal waste recovery seem to be one of the few possibilities when there are no other income opportunities for non-skilled workers. In Rosario in Argentina, for example, the number of informal workers rose by 10 during the economic crisis in 2001 (Spies, Florisbela dos Santos, Wehenpohl, 2005).

According to the World Bank, informal activities can be divided into:

- 1) Coping strategies (survival activities): casual/ temporary jobs, unpaid jobs, multiple job holding;
- 2) Unofficial earning strategies (illegality in business): (1) Unofficial business activities: tax evasion, avoidance of labor regulation and other government or institutional regulations, no registration of the company; and (2) Underground activities: crime, corruption – activities not registered by statistical offices.

This distinction is important as most of support activities, often motivated by social concerns, focus on the first category. But when the informal activities develop, unofficial businesses may become a more common interlocutor, and the cooperation may be more characterised by finding ways to formalise these businesses. On the other hand, the support of individuals pursuing coping strategies can lead to interference and conflicts with systems of crime and corruption. Organisations working with the informal waste sector thus have to clearly define their target group and strategies to reach this target group.

The analysis of the IS in SWM and the formulation of promotion and integration policies require to define the boundaries of the SWM system. Use of recycled waste or feeding of recovered organic waste to pigs, are these activities part of the SWM system? There are no generally correct answers to these questions; the way of dealing with them and defining the boundaries of SWM system

## Wastepicking and Recycling in Colombia

By Silvio Ruiz, Coordinator of the Recyclers' Association ARB (Asociación de Recicladores de Bogotá)

In Colombia, the activities of recycling started around the 1930's, due to internal political, economical and social problems. Since then, the population has been constantly exposed to war and violence. Originally, the reason of the conflict was to try to solve the problem of distribution of wealth. The violence originated the forced displacement from rural to urban areas.

These persons arrived to the cities with their children and their animals; without name or education, and the popular economy began. They started to watch out cars, to work in different homes and to look for food and shelter in the dumpsites. Recyclers in big cities like Bogota are former peasants and therefore the life in the city breaks their whole economical rationality. They used to get food from the soil and barter trade was their main way of paying for other things.

At the same time, the consumption patterns in the city caused the generation of new kinds of wastes, which started being a problem. The only solution was to gather it and make it disappear by throwing it into rivers at the limits of the city. New uncontrolled dumpsites started to grow and offered an opportunity to the displaced population. They started to search and collect slaughter wastes, from which they could recover some food. They also started collecting cloths and metal plates to build their houses.

It was the demand of apothecaries and the pharmaceutical branch which initiated the recycling activities. Their need of small glass bottles for different medicines created an opportunity for wastepickers. From a survival activity, recycling became a commercial practice. The demand increased later with the development of the metal, paper and glass industries in the country.

The presence of German industry activated the recycling of other materials in the 1940s and 1950s, more as a way of reducing costs as of reducing environmental impacts. Today, however, the environmental relevance of wastepickers and recyclers cannot be ignored.

depends on the objective of the analysis to be carried out and the policy to be formulated. Narrowly defined boundaries of the SWM system limit the results of the analysis by "cutting off" parts of the "value chain" of (solid) waste (Gerold, 2009).

The focus is mainly on IS workers and enterprises which are directly involved in collecting, recycling and selling of solid waste, and the related organizations, as self-help organizations of the IS and NGOs. But in some of the projects presented here, pig feeding activities or the use of recycled inputs by companies are an important part of activities because these sectors are closely interlinked with the waste management system.

In most studies, organisations of informal workers are also described as being part of the informal waste sector, although literally, a co-operative, association or company of former informal workers which is officially registered and charged with waste management activities is no longer part of the informal sector. But in order to track the evolution of these groups and because in most cases, partnerships with informal actors do not stop with their official registration, these formalised groups will also be described in studies about the informal waste management sector.

A big spectrum of persons is involved in the informal sector of solid waste management, including men, women, children and elderly. In many cases they have a migrant background, belong to specific social groups or are from the surrounding rural areas. In India, for example, low-caste rural populations and Bangladeshi migrants came to Delhi and started to carry out activities in waste management and sanitation (SNDT and Chintan, 2008). In Egypt, the informal workers traditionally assuring waste collection and recovery were Christian migrants from the rural South – the Zabbaleen (CID, 2008) These people are working and living under extremely difficult and hazardous conditions, and they are often threatened in their activity by public efforts to "modernize" waste management through mechanization and more effective waste collection and disposal (Gunsilius and Garcia Cortes, 2010).

**Rowena Garcia, earning her livelihood from waste in Iloilo, Philippines**

Rowena Garcia, is 37 years old and has 6 children. She used to work in housekeeping, but she gets more money as a waste picker, therefore she started to work on the dumpsite of Iloilo.

She has been working there for the last 20 years. One of her priorities is to guarantee the education of her children and, although the government pays part of the fees, the school material is still expensive. She joined the waste pickers' association and started to work at the separation plant next to the disposal site that was taken into operation by the municipality in December 2008.

The group has elected her as leader of one shift in the sorting center because of her engagement and good relationship with the other waste pickers. She likes to work in the sorting plant because it is more organized and if the group members understand each other, the role of the leader is accepted. She also thinks it is much better to sell the recyclables together than individually, because the workers receive better prices.

The sorting of alternative fuel resources for the cement producer Holcim is a good additional income source, but for the moment, the payment occurs quite irregularly. As a leader, she has to coordinate the group, guarantee the achievement of high sorting rates and assist to regular meetings with the other team leaders and the personnel of the municipal service. Although it is hard and she does not receive more money than the others, she enjoys being a team leader and being a good example for others.

Different statistics show that the number of women who are involved in the IS of SWM depends both on the country or region and on the activity. In some places, waste pickers and traditional itinerant waste buyers are rather exclusively women, while in other regions men perform these first activities of the value chain, while women work at home sorting or pre-processing the collected wastes. A study commissioned by GIZ indicates that between 24 and 42% of informal waste workers are female (Scheinberg, Simpson, & Gupt, 2010). But the available statistics often under-represent the part of (self-) employed women or the ones who work together with their husbands.



Rowena at the disposal site (Photo: Salome Villamor)



## 3.2 Working conditions of the informal sector

### 3.2.1 Child labour

Child labour is common in the IS. Exact data on the numbers, age and sex of children who work in the IS, however, are very difficult to access, but the participation of children seems to vary considerably from town to town. Many children normally go together with their parents and work with them in the different activities of the value chain, because their parents cannot pay school fees and prefer not to leave them alone at home. Some children however work independently from their families, either in groups under a leader or alone, in order to collect some money for themselves or for their families. In many cases the familiar structure fails or is not strong, and

some children have to overcome difficulties and survive without support by joining the informal waste sector. The most invisible types of child work though, are the activities at home, when children sort the waste which has been collected by their parents, and prepare it for selling (Gerold, 2009). In Quezon City, for example, the percentage of child labour in informal waste management is reported to be 30% (SWAPP, 2006). ILO examined over thirty projects in this sector throughout the world, identified measures that have shown some success in stopping child labour and helping the children recover from this dangerous and difficult type of work (ILO, 2010). The table below shows a summary of actions to address child labour in waste-picking.

**Table 1. Summary of Actions to address Child Labour in Waste-Picking**

<b>Protective measures (short-term)</b>	<b>Health and social services</b> e.g. food and drinking water, vaccinations, drop-in centres, first aid and health care, toilet and washing facilities, games and play areas, counselling
	<b>Legal protection</b> e.g. policing to increase safety in the area, monitoring and labour inspection to ensure waste disposal companies adhere to standards, enforcement of drug laws, health and environmental inspection of public water supplies and air
<b>Release &amp; Reintegration (medium)</b>	<b>Education:</b> day care and pre-school for younger siblings; scholarships, remedial classes and homework help; liaison to improve access and success in public schools; multi-modal non-formal education; vocational training, dance and theatre, exposure trips and excursions
	<b>Income generation and alternative employment,</b> e.g. diversifying income for waste-picker families through credit, training, and job placement; increasing income for families by providing access to clean(er) materials, in larger quantities, directly (without middlemen); establishing learn-and-earn projects for youth of legal working age.
<b>Preventive Measures (long-term)</b>	<b>Raising the status of the work of waste-pickers</b> e.g. providing them with birth certificates and identity cards, research and campaigns to legitimize adult waste-pickers' role in solid waste management
	<b>Raising awareness,</b> e.g. of parents, waste dealers, recyclers, local governments, and general public on children's rights to education, freedom from exploitative work, and safety (occupational hazards)
	<b>Legislation and capacity-building,</b> e.g. campaigns to ensure laws are consistent with international standards on child labour, laws that recognise waste-pickers as workers, control access to disposal sites, strengthening of government labour inspectors
	<b>Organizing,</b> e.g. setting up children's clubs, parents' associations, or waste-picker co-operatives; inviting these groups to participate in solid waste management stakeholder forums
	<b>Creating an integrated solid waste management system,</b> e.g. providing separate sorting areas at landfills and transfer stations; giving waste-pickers contracts for selective waste collection, sorting and composting; involving them in formulation of solid waste management plans and policies.

Source: ILO, 2010

### 3.2.2 Income

In a GIZ-funded study about the economic impacts of informal sector activities in six cities around the world (Cairo, Cluj, Lima, Lusaka, Quezon City and Pune), it was shown that all informal valorisation activities along the entire value chain are profitable and generate a total net profit of 130 million Euro, which is distributed between 73,000 informal workers (Scheinberg, Simpson, Gupt et al., 2010). The incomes of informal waste workers, however, differ enormously depending on their activity. In Lima, for example, there can be 100% difference in earnings between the informal sector categories of work (Scheinberg, Simpson, Gupt et al., 2010).

In some cases, up to 91% of the households involved in the informal sector of waste management fully depend on incomes from these specific activities, which is the case of Cairo (Scheinberg, Simpson and Gupt, 2010). Here, the zabbaleen have built a strong personal relationship with the households they have served through decades, and whole neighbourhoods work in the informal sector, here also known as the “traditional sector”. Many informal labourers work on a seasonal basis or part-time, which means that the informal activities of waste management are not their exclusive income but an additional support, for example in difficult situations or just to gain more money than with their conventional job.

Street sweepers are normally paid for the provided service by the residents of the streets where they work. Some door-to-door collectors are paid by the households from where

they collect the wastes, while some collect without cashing for the service, but get their income from selling the recyclable materials that they find in the bags. In the case of Cairo, for example, some door-to-door collectors (Zabaleen) are partly subcontracted by the formal collection enterprises, who cannot cover the collection of the whole city and who would have unsustainable costs if formal workers would provide this service, to which the citizens are used to (Iskandar, Shaker and El-Sherbiny, 2010).

In the Philippines, the personnel sorting waste at the MRFs (Material Recovery Facilities) is mostly not paid by the barangays<sup>2</sup> or the companies, but do the sorting in exchange for receiving the sellable materials contained in the waste; these are thus informal workers that are nevertheless integrated into the formal collection system (Gunsilius and Garcia Cortes, 2010). Street and dump pickers both get their income from selling valuable material, but their incomes also diverge importantly, because normally the quality and quantity of recyclable material found at the dumpsite is significantly lower. Sometimes the formal workers adopt the role of informals by combining activities, which is for example the case of the “jumpers” (both the formal garbage crew and other informal waste workers), who on the way to the dumpsite recover more material from the trucks before they reach the disposal facility (Gunsilius and Garcia Cortes, 2010).

Labourers who are employed by owners of junkshops or small processing enterprises get salaries for their work. A large part of the IS workers, however, is employed in the informal business of their families; women and children often sort, clean and pre-process or help in these processes at home or at the collection places, and are generally not explicitly paid for their labour (Gerold, 2009).

Because women tend to be concentrated in lower-earning activities such as waste picking, their average income is lower. Even when they do the same kind of work, they tend to earn less and are also paid lower rates for materials by junk shops. For example in Lima, women’s average earnings typically range from 45% to 90% of men’s earnings in the same occupations, while in Pune female itinerant waste buyers earn a fourth of what males do, due to their limited working tools and lower transport capacity (Scheinberg, Simpson, Gupt et al., 2010).

<sup>2</sup> A barangay is the smallest administrative division in the Philippines



Informal waste collector selling materials at sorting centre, Costa Rica (Photo: GIZ)

### Studying gender inequalities in the informal waste sector in Latin America

By Dr. Anna Lúcia Florisbela dos Santos, Brazilian and German economist with focus on informal sector, waste and water management, training and gender in Africa and Latin America. Works in international development cooperation since 1987. Author of numerous publications.

The general objective of a study undertaken by the Canadian International Development Research Centre (IDRC) in cooperation with GIZ is to reduce gender inequalities within the segment of the population that works in informal collection and classification of recyclable materials in cities of Latin America and the Caribbean. At the same time, it will attempt to demonstrate that the reduction of gender inequalities has a double positive impact: it reduces poverty and also improves local environmental management.

The study began in July 2009 in the four Latin American cities of Lima, Cochabamba, São Paulo and Montevideo and is gathering information about income, social inequities, environmental improvements, cultural factors and the nature of women's involvement in the area of municipal solid waste (MSW). This information will allow municipal governments to employ fundamental data in the design of policies, plans, programmes and various concrete sectoral measures and thus integrate gender policies into MSW management in the aforementioned cities.

Identifying and analysing the best gender equity practices related to MSW in these Latin American cities permits to present basic elements and minimum measures that can be used to incorporate gender into MSW management strategies at the various action levels (federal, state, municipal and community).

In the first of three phases, an analysis was carried out on the basis of secondary information, including general data on the population, its breakdown by sex, the generation and composition of domestic waste, and information on the organisational structure of waste management and processes such as collection, separation, final disposal, etc. Specific information on gender in the context of solid waste was not included.

In the second phase, the emphasis was on conducting and analysing in-depth interviews, group work with the interviewees and feedback from the evaluation and the interviews. An attempt was made to thoroughly understand the gender inequalities and their origins and to initiate cooperation between the cities. Information was obtained on the needs, interests, problems and expectations of the women involved in MSW management, and a regional report was drawn up on the problems that women in this sector confront.<sup>1</sup>

The inequalities came to light when all the tasks involved in selective recovery in the informal sector were analysed. Generally, experts in the area of waste management attach little importance to the phase of thoroughly cleaning the material collected from the street. However, without this separation and cleaning, it is not possible to sell to the various waste buyers. This 'invisible phase' in the informal management of waste gives the activity a family character, because it is generally carried out at home with the participation of the entire family, including the children. The women are doubly invisible, as the importance of this work is neither understood nor valued because it is carried out at home. Our study revalues this step in the work of waste management in the informal sector and thus re-examines gender inequalities beyond those that are evident in urban low income families.

The surveys yielded interesting results and, although the veracity of the information provided by interviewees may vary due to their feelings of shame, a general tendency is evident. The women tend to work more often in classification activities, although those who do not have a partner also work as collectors in the street. The economic situation of the women seems to be more precarious than that of the men, which is reflected, for example, in the fact that the women collectors in Lima have to work on foot

<sup>1</sup> Source: Acción-investigación e influencia en políticas: La dimensión de género en la gestión de residuos sólidos en las áreas urbanas y peri-urbanas de las ciudades de América Latina y el Caribe (Action research and policy guidelines: gender dimension in solid waste management in urban and periurban areas of Latin American and Caribbean cities); Funding IDRC 105183-001 (as of October 6, 2010).

because they do not have horse-drawn carts or motorised three-wheelers, as do most male collectors. The overwhelming majority of women have only a primary school education, and a few cases of illiteracy were observed. The women who indicated that they had worked in other fields previously said they had worked in other informal sector activities, mainly in domestic work; some indicated that they had always worked in material collection and classification. The majority expressed the desire to do something else in the future, although some saw no problem in continuing this activity.

There are organised groups of recyclers and collectors in all the cities, among whom the percentage of female and male members is relatively balanced. In general, both men and women collect all the recyclable material they encounter; what they find most available is paper and cardboard combined with other materials. Few collectors specialise in only one material. Contrary to what is normally thought, it is not only the men who collect metal. It was not possible to obtain objective information from the men on the division of labour in the home. It would be interesting to directly survey the men about their experience and view of domestic work,

instead of having only the interpretation of the women about the lack of assistance from the men. In Cochabamba, some discrimination against informal workers of Quechua or Aymara origin was observed, particularly against those who express their indigenous origin through typical clothing of their village, the majority of whom are women; many Quechua or Aymara men dress in western clothing. Environmental awareness does not appear to be an important issue for either men or women.

The third phase is now being implemented and efforts are being made to study good gender equity practices related to urban solid waste management in each city, and to exchange information about experiences with these practices. It appears that the associative forms of organisation are the best practices with the greatest potential to improve working conditions in terms of security, hygiene and social insurance coverage; where these are not found, there is often a lack of trust in the commitments of others, the negotiations and the neighbours with respect to taking care of children and robberies.<sup>2</sup>

<sup>2</sup> (Preliminary) reflections of the Montevideo team.

Compared to average salaries in industry and in the formal waste sector, the average income of informal workers shows different tendencies in different countries. The average informal sector worker earns more than formal sector workers in Cairo and Quezon City, and less in Pune, Lima, Lusaka, and Cluj. In all these cities, however, average earnings in the informal waste sector are up to four times higher than salaries of unskilled labour in industry, which are normally lower than the wages of the formal waste sector (Scheinberg, Simpson, Gupta et al., 2010). This suggests that not all informal workers of this sector belong to the poorest of society. If no exploitation occurs and these persons manage their work in an effective and organized way, this work can enable them to escape from poverty. Income from waste picking is sufficiently attractive for most of them to keep working in the sector despite very poor working conditions and health hazards (Price, Rivas and Lardinois, 1998).

### 3.2.3 Social aspects and stigmatisation

People involved in collecting, transporting and recycling of solid waste generally suffer a social stigma of being associated with waste. Because their activities commonly affect their appearance, informal waste workers are often subjected to harassment from officials, exploited by traders and are despised by the society. Their living and working environments tend to overlap, which not only affects their health but also increases the disrespect and neglect from neighbours and enforces their exclusion. This segregation makes them weak and susceptible to exploitation from middlemen or corrupted policemen, they easily end up in a dependent relationship with dealers from which they have to lend money, or are even persecuted by extremists who decide to abolish them in a violent way. They hardly find citizens who esteem and appreciate their work, or partners at the political and legal levels who defend their interests.

They find no financial support at the bank because of their low and unstable income, while the solution of microcredits is still not very common in this branch. Even when owning small informal enterprises, the owners are excluded from official support schemes for promotion of SME and they are not eligible for formal credits of banks or financing institutions (Gerold, 2009). The fluctuant and unstable prices of recyclable materials cause that their income is frequently threatened, especially in the case of wastepickers without storing facilities. On the other side, junkshop owners, dealers and middlemen are in general able to accumulate bigger quantities of material and sell it for a better price directly to the industry, while at the same time they can gather materials and wait until the prices are higher.

Informality also influences the relationship between the owner of the enterprise and his/her workers. Labour laws and regulations are not observed. The number of employed workers generally varies according to the season or the quantity of work; unskilled or low-skilled workers are often only employed on a daily basis (Gerold, 2009).

### 3.2.4 Health and safety

Informal jobs are not registered or protected by the state and therefore are informal workers normally excluded from the social security system and other benefits of formal contracting (Jütting & Laiglesia, 2009). At the same time, informal jobs are normally precarious and insecure; they take place in hazardous or unhealthy environments, and they are not covered at all by the formal health system. Because for most informal workers, especially in the waste management sector, this is the only available option for a financial income, they are willing to perform risky activities and renounce to use protective equipment due to the extra costs that they immediately cause, ignoring the possible costs that are avoided at the long term by preventing accidents, injuries and occupational diseases.

The World Health Organisation (WHO) reports that formal workers involved in the waste management show higher injury rates than in industrial work. The situation for informal workers in developing and emerging countries is evidently worse. While standards and norms for the formal solid waste management sector in industrialized countries have reduced occupational and environmental impacts significantly, the risk levels are still very

high in most not-industrialized countries because of different reasons (Cointreau, 2006). The composition of municipal waste, which is normally mixed and also contains hazardous wastes and faecal matter, the poor financial resources for better infrastructure and legal framework, and inadequate understanding of the magnitude of the problem are some of these reasons.

The risks to which they are exposed are related to the handling of wastes and containers, transport activities, operation of equipment and stress factors. Their working environment is especially critical because it combines an unhygienic context and risks of accidents. Additional dangers for the informal sector appear because their living and working environments usually overlap.

In the case of small-scale entrepreneurs of the waste management sector, who normally have started as low-income independent waste workers and have grown until having their own small enterprise, the main reason that motivates them to consciously remain in the informality is to save money by avoiding the payment of taxes, registration costs, public services and/or insurance fees. Because they have always been working under these conditions, they normally do not see the necessity of formalizing their workers. Informal workers normally underestimate the dangerous character of the performed activities because they are familiar to them. Their health perception is a subjective indicator linked to their few medical grievances. Without a doubt, medical examinations could



Embedded – Father and son at their material depot (Photo: Enrico Fabian)

indicate the true health situation of each person. It can be assumed that the real situation is worse than perceived by the workers themselves. Additionally, the tendency to not recognize personal health problems could be explained by a sense of shame or fear of being criticized (ACEPESA, 2010).

In February 2010, ILO (International Labour Organization) and JICA (Japan International Cooperation Agency) developed and published the WARM (Work Adjustment for Recycling and Managing Waste) training manual to help improve the working conditions of workers of the

waste sector, where safety and a healthy environment have to play a central role (Kawakami and Khai, 2010). Although it is focused on formal waste collectors and truck drivers in urban areas, the manual delivers good practices, approaches and improvements that can be likewise applied in most cases of informal work, when adapting some specific conditions.

The most important success factors to improve the health and safety conditions of informal waste workers are presented below.

---

#### **1. Having direct contact to the informal workers:**

When trying to redesign working conditions is essential to interview informal workers and observe their working processes. With an active participation of at least some laborers, you can identify the real weaknesses and risks that affect their working conditions and find applicable solutions.

#### **2. Promoting dialogue and cooperation between waste collectors and the community:**

Only when decision makers and the community understand the work this persons do and their importance for the society, their daily work will be lighten because of the support they will receive through better government policies towards occupational health and health insurances. A higher participation of the population, e.g. in sorting at the source also facilitates their activities, because the working time can be optimized and the dangerousness of the wastes decreases when they are not mixed with hazardous or dangerous residues.

#### **3. Learning from (local) good practices:**

Existing effective and safe systems should be stressed and optimized according to the local conditions. When applying good practice approaches from other regions, a previous analysis and adaptation process has to be done. Environmental, social, legal and economical conditions have a big influence of the success of solutions. An effective insurance system in one place might be a failure in another place if the legal framework is inconvenient. In the same way, a special kind of transport vehicle can bring advantages under specific weather conditions but disadvantages in other cases.

#### **4. Informing and training informal workers in health and safety issues:**

Because informal workers tend to underestimate the risks of their job and to not admit personal health problems, it is important to constantly inform them about the real risks and the importance of health checks, vaccines and protective equipment. Only if they are conscious and worried about their body, they will voluntarily apply the required measures.

#### **5. Implementing improvements in a stepwise manner:**

To start with simple, low-cost solutions motivates both informal workers and partners who provide the financial support to apply these solutions. If expensive solutions are planned at the beginning, it will be difficult to find the financial support and the informal workers will forget what they learned about the importance of safety and health; the motivation might decrease. After registering the first good results, planning and implementing more expensive and challenging solutions should be easier.

---

**Delia Animas, 52, has been working at the dumpsite in Iloilo City, Philippines since 1986**



Delia Animas, (Photo: Sofía García-Cortés)

On a normal day, she starts working at 6 am and stops at around 5 pm, when the sunlight starts to diminish, making it difficult to recognize the wastes.

Until a few months ago, the collection was done at night and she had to work very late under bad illumination conditions. She takes several breaks when she wants to take lunch or when she feels sick or dizzy. During hot sunny days, she feels weak very often, but she works until the end of the day. If she has to stay at home, someone from the family or the neighborhood has to lend her money. She goes to the doctor only in critical situations, which occur around once a year. She knows the GIZ support project but she still prefers to work at the open dump because she needs to be flexible with her schedule. Her main income source is the breeding of pigs, which are fed with organic wastes that she finds in the dumpsite. Nevertheless, she would like to have a fixed job and feel no daily pressure about how she gets her food.

### 3.3 Importance and contributions of the informal sector

The modernization processes in the waste management sector are common in the attempt to increase the service coverage and the efficiency of the whole system. This includes mainly the mechanization in the whole value chain, beginning with the inclusion of fuel operated vehicles in the collection, going through machinery for the (pre) processing, and ending with mechanical processes for the disposal or incineration of wastes. The focus is seldom on recovery and recycling of waste. At the same time, these processes tend to ignore the role of the informal waste workers or even to exclude them intentionally.

Unorganized informal waste activities certainly have negative effects and generate several serious problems. The impacts of the activities of IS workers on their health represent a large hidden cost; injuries and diseases cause lost of income and lower productivity, while specific health risks that result from exposition to toxic materials become partly obvious in the long term. At the same time, if waste pickers and scavengers only take the valuable materials and disperse or burn the other wastes at the street, the hygienic and environmental conditions of the neighbourhood are deteriorated. In particular, the processing of valuable but hazardous wastes such as e-waste is normally very critical not only for the environment but for the health of the personnel involved. Several studies have

shown, however, that organized informal recycling activities have positive effects on the environment, reduce the costs of waste management systems and provide income opportunities for large numbers of poor people (Gerdes and Gunsilius, 2010).

Between the direct and indirect positive impacts of the activities of the informal waste workers, social, ecological and economical aspects can be identified, all of which have direct and indirect positive economical effects on the municipalities. The following chapters will focus of the social importance of the informal sector, the impacts on resource economy and the meaningful role in the reduction of greenhouse gases (mitigation).

#### 3.3.1 Social benefits of integrating informal waste management activities

The service provided by informal collectors, recyclers and enterprises has several important social impacts. On one side, these workers provide important services for the community and help improve the hygienic conditions of settlements that are normally not covered by the formal sector. This helps enhance the living and working conditions of an important fraction of the population.

At the same time, well managed informal activities in this branch generate work and income for many people and might help to overcome poverty. Although not always informal workers are extremely poor, also in the case of

## Misconceptions about the Informal Waste Sector

By Dr. Martin Medina

### Myth # 1: Informal recycling is a recent phenomenon

Many people, including some specialists, think that informal recycling goes back only a few decades. In fact, it has existed for thousands of years. Our ancestors began to use and refine gold, copper and bronze when metallurgy first emerged, some 5,000 years ago. They quickly realized that anything left over from the process—as well as old and broken objects—could be melted down and recycled to make new objects. People who specialize in recovering metals, not to mention other waste materials, such as glass, wood and paper, have been around for centuries.

### Myth # 2: All scavengers are indigent and extremely poor

The way scavengers look and their daily contact with garbage leads society in general, as well as some academics, to believe that they are among the poorest members of society. It is true that scavengers sometimes have very low incomes, below poverty levels in many countries. However, this poverty tends to be caused by exploitation by middlemen and corrupt leaders. If scavengers are not exploited, they can earn several times the minimum wage, which enables them to escape from poverty. Microenterprises, co-operatives, and public and private associations have been successful in reducing poverty among scavengers.

### Myth # 3: Scavenging is a marginal activity

Scavenging is often believed to be an activity relegated to society's social and economic fringe. This is not true. Since scavengers first began to ply their trade, they have played a fundamental role in supplying raw materials for industry. In Latin America, scavengers have been essential to the development of the paper industry for more than four centuries. Mexico's paper industry is trying to use as much waste paper and cardboard recovered by pepenadores (cardboard collectors) as possible in order to survive the international competition brought on by the country's economic opening.

### Myth # 4: Scavenging is a disorganized activity

It is true that many scavengers are often not affiliated with any particular organization. However, scavengers often specialize, and they even have systems of division of labor. In the streets, they sometimes establish territorial divisions. Scavengers also make agreements with local residents, stores and businesses, for example, that the latter sell or give away materials to certain scavengers and not to others. Garbage dumps and landfills are the most highly organized of all. Hundreds or even thousands of garbage-pickers may work there, and they tend to be organized in order to avoid conflicts and disorder. They have work shifts and supervisors, and each worker has a specialty. At some of these sites, scavenging resembles an industry.

### Myth # 5: Scavenging has a minimal economic impact

This opinion is widely held but incorrect. We know relatively little about the financial impact of scavenging, but we do know that it has a large financial footprint than people acknowledge. In Brazil alone, scavenging has an annual economic impact of about US \$3 billion. World Bank estimates suggest that more than 15 million people worldwide work as scavengers, which would put their economic impact at billions of dollars a year. Scavenging cuts down on imports of raw materials, which enables the country to save hard currency. The scavenger-recovered materials are often exported, thus generating hard currency. In Argentina, for example, the plastic used to make carbonated beverage containers is exported to China, where it is recycled and transformed into new products.

### Myth # 6: Scavenging is a static activity

Scavenging is actually highly dynamic. It is connected to and depends directly on developments at the national and international level. Population growth and urbanization increase the production of consumer products and the resulting waste materials. The industries that produce these products require raw materials. Increased economic activity and international trade also boost the demand for the materials recovered by scavengers. The price of these materials depends on global supply and demand factors. In times of economic



crisis, scavenging tends to rise, as a result of unemployment and poverty. In Mexico, the 1994 peso devaluation and ensuing economic crisis led to a dramatic increase in scavenging. Similarly, Argentina's devaluation and economic crisis during recent years have increased the number of cartoneros working on the streets of Buenos Aires and other cities.

**Myth # 7: Scavengers are a nuisance that must be eliminated**

Government authorities in most countries think that scavengers constitute a problem that must be eliminated. It is true that scavengers may cause some problems, such as opening bags of garbage and scattering their contents onto the streets. Working in garbage dumps presents serious health risks to scavengers. The authorities usually respond by making scavenging activities illegal and chasing down the offenders. In most cases, however, these repressive policies cut scavengers' income and make their living conditions worse. If the authorities want to reduce poverty, they should not persecute scavengers.

**Myth # 8: Scavenging has no place in modern waste management systems**

As a result of the response described above, many officials believe that the solution to the solid waste problem is to adopt the kinds of advanced techniques used in developed countries. It is true that there is no role for scavengers to play in developed countries. But socioeconomic conditions in developed countries and developing ones are completely different. In many cases, it makes no sense for low-income countries to embrace the same waste management techniques used in Europe, Japan or the United States. Scavengers have a significant impact on garbage collection, decreasing the need for garbage trucks and sanitation workers, and lengthening the useful life of garbage dumps and sanitary landfills. In fact, it could be argued that when given proper support, scavenging offers a perfect example of sustainable development: it creates jobs, reduces poverty, prevents pollution, conserves natural resources, supplies low-cost raw materials to industry (thus making it more competitive) and protects the environment.



E-waste recycling (Photo: GIZ)

informal entrepreneurs, the activities of recycling and retail of valuable materials draw concrete income opportunities for entire households and informally employed informal workers.

Because the informal sector mainly works in the recovery and recycling of valuable materials and sometime in the collection service against tips and voluntary fees, their main income comes from the revenues of selling the materials. This causes that the net costs are significantly lower than the costs of the formal sector, which mainly provides the services of collection and disposal and has to finance its activities through fees and subventions from the municipality. The informal sector saves the formal authorities a great deal of money, mostly due to avoided collection and disposal costs (€14 million per year in Lima, €12 million in Cairo, and € 3.4 million in Quezon City) (Scheinberg, Simpson, Gupt et al., 2010).

Indirect benefits brought by the informal sector are, for example, the decrease of associated health costs caused by water induced diseases and illnesses related to pollution and rats or other vectors; or the savings related to the future clean-up of waste deposits and contaminated sites, which tends to be less problematic when organic and recyclable materials are sorted out before dumping.

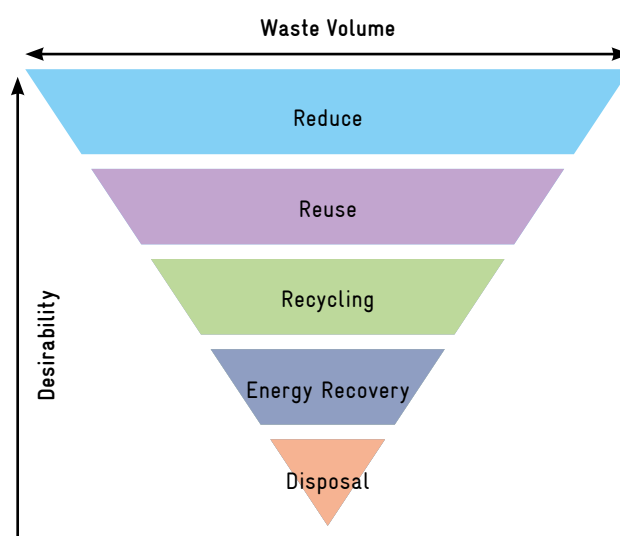
### 3.3.2 Potential contributions to the resource economy

Through an increased recycling rate, the informal sector helps reducing the depletion of raw materials, natural resources and energy that otherwise would be used in the production of new products. The growing scarcity of primary resources, and therefore their increasing prices, means that the use of waste as a recyclable material holds considerable economic and ecological potential. These high and unstable prices constrain political and economic stakeholders to look for possibilities in improving the efficiency of resource use. In this context, the optimization of the relation between raw material (input) and products (output), as well as the reduction of byproducts play an important role. Higher material and energy efficiencies mean improvements in the competitiveness of enterprises and national economies, for which the concept of circular economy delivers good solutions. By introducing closed-loop waste-management systems, waste can be avoided, the quantity of waste in landfills reduced and secondary resources returned to the production cycle. Indirectly, this helps avoid GHG emissions (GTZ, 2008).



Submerged in resources from waste, Egypt (Photo: Nour El Refai)

This concept suggests that the wastes and byproducts of a product or service over its life cycle should be introduced again to the production processes in order to close the loop. The new waste hierarchy proposed by the European Union (2008/98/EG) intends to harmonize with this concept and defines 5 levels:



Graph: GIZ

The German international cooperation communicates these tested concepts in the partner countries and tries to adapt them, together with the partners, to the specific local situation. A mix of technology transfer, access to information, financing, trainings of personnel and development of institutional capacities should be implemented, without trying to replace well-functioning existing systems.

Recycling lowers the rate of depletion of natural resources, reduces resource and extraction impacts of industrial activities and the land area which is required for waste disposal. The use of compost replaces chemical fertilizers. The substitution of new by recycled materials decreases the energy consumption of the production processes. This applies to both formal and informal sector, whenever they recover and recycle materials.

Recycling activities in developing and emerging countries, however, tend to be completely or to greater part done by the informal sector. This sector achieves high recovery rates (up to 80%) because the revenues they get directly from selling the materials are vital for the livelihoods of the people involved. Consequently a huge variety

of recyclables is segregated and can be further processed in accordance with new demands and technological advancements in the recycling industries (Gerdes and Gunsilius 2010).

Cairo, Cluj, Lima, Pune and Quezon City show a larger share of material recovery done by the informal sector than corresponding formal activities (Scheinberg, Simpson, Gupt et al., 2010). In Cairo, the formal sector only recovers and recycles part of the organic fraction by producing compost, while the recyclable non-organic

materials are either transported to the disposal sites or sold to informal groups dedicated to sort and recycle. In Pune, the formal sector does not recover or recycle at all. Lima shows a very intensive informal recycling activity compared to the formal sector, whose recycling rate is almost negligible. In contrast, Lusaka has very low recycling percentages in both sectors, being however, the formal sector twice as effective (Scheinberg, Simpson, Gupt et al., 2010). The reported recovery rates can be seen in the next table.

**Table 2. Comparison of material recovery by formal and informal sector in six different cities**

City	Formal sector		Informal sector	
	Tonnes	Percent of total	Tonnes	Percent of total
Cairo	433,200	13%	979,400	30%
Cluj	8,900	5%	14,600	8%
Lima	9,400	0.3%	529,400	19%
Lusaka	12,000	4%	5,400	2%
Pune	-	0%	117,900	22%
Quezon City	15,600	2%	141,800	23%

Source: Scheinberg, Simpson, Gupt et al., 2010



The informal sector contributes significantly to resource efficiency as well as to environmental and climate protection

### 3.3.3 Potential contributions to climate protection

The reintroduction of materials into the production chain causes a direct reduction in the emission of pollutants generated during the processes of extraction and production. Furthermore, by reducing the quantity of wastes that end up in the dumpsites and landfills, an important disposal volume is saved and the lifetime of the site is extended, while less greenhouse gases (GHG) are emitted due to the lower content of organic material. Model calculations show that GHG emissions in low- and middle-income countries could be reduced by 10-15% by establishing sustainable SWM systems (Ökoinstitut and IFEU, 2010). In this way developing and industrialising countries could make a considerable contribution to environmental protection at low specific costs.

The highest quantity of waste in developing and newly industrializing countries is disposed in dumpsites and landfills. The decomposition of the organic material within the waste leads to the emission of a gas mainly composed of methane (50-70 Vol.%) and CO<sub>2</sub> (30-50 Vol.%). Methane is of special concern since its warming effect in the atmosphere is 23 times stronger than that of carbon dioxide. Another big quantity of wastes is scattered and eventually buried. Although scattered waste produces significantly less GHG because the presence of Oxygen, it contaminates the soil and poses health hazards to the population. Additionally, the common spontaneous or induced fires also contribute to the emission of pollutants in the air.

However, emissions of the waste sector can be easily avoided. Landfill gas can be captured, treated and utilized to produce energy; organic matter can be transformed into biogas and/or compost through biodigestion or composting processes; and recyclables can be transformed into secondary raw material at a lower energy demand and thus reduce energy consumption and use of primary resources.

The high recovery rates of the informal sector contribute directly to emission reduction. The separation of organic matter, which is normally used to feed animals or for composting causes a lower generation of landfill gas. The recyclable non-organics that they recover are reintroduced to the industrial processes and significantly reduce energy consumption and thus emissions during these production processes – e.g. in glass production by 35%, paper and steel by over 50%, plastics over 70% and aluminium by even more than 90%.

The environmental impacts in terms of carbon footprint of informal and formal activities in 6 cities are shown in the next table. The emitted tonnes of GHG are shown as a positive value, while the saved emissions are shown as negative numbers (in parenthesis). The related monetised costs are shown in Euros per year using prices for carbon equivalent tonnes.

**Table 3. Comparison of carbon footprint by formal and informal sector in six cities**

City	Formal sector		Informal sector	
	GHG (tonnes CO <sub>2</sub> eq)	Total net cost (benefit) of GHG emissions (€/y)	GHG (tonnes CO <sub>2</sub> eq)	Total net cost (benefit) of GHG emissions (€/y)
Cairo	1.689.200	16.244.800	-28.900	-277.500
Cluj	103.600	1.295.300	-38.200	-478.000
Lima	448.500	4.313.400	-496.700	-4.776.800
Lusaka	25.800	247.700	57.700	554.600
Pune	210.600	2.025.000	-295.000	-2.837.200
Quezon City	472.800	4.546.700	-249.200	-2.397.000

Source: Scheinberg, Simpson, Gupt et al., 2010

## 4 Integrating the informal sector: approaches, examples, impacts

The potential positive impacts of informal sector integration show that measures to include this sector in waste management systems are necessary. Different levels and models of integration are possible and range from mere recognition of the informal workers by public authorities (e.g. provision of identity cards) to a complete formalization of actors as companies or co-operatives. When it comes to the question how to do this, several conditions have shown to be important for the successful implementation. These are for example the attention paid to the activities of informal waste workers in public policies, regulations, and procedures, the organisation of informal actors, the technical and managerial capacity these workers have as economic actors, and the networks they establish with formal companies and other institutions like providers of business or financing services. Pilot projects conducted by GIZ on behalf of BMZ, and by other organisations show successful approaches and difficulties to take into account.

### 4.1 Policy making for the informal sector

Improving SWM systems can affect the IS positively or negatively. It can lead to the elaboration and implementation of strategies which finally threaten or improve the income generating activities that IS workers traditionally carried out. Strategies for improving SWM systems, however, can also support the integration of the IS in the (formal) municipal SWM system and formally charge informal actors with SWM activities.

As the main characteristic of the informal waste sector is its “invisibility”, one major element of strengthening informal sector integration consists of raising awareness of political decision-makers for the work and the possible contributions of the informal sector for an appropriate waste management system, as well as for the important aspects to consider when integrating them. Experience, especially from India and Brazil, clearly shows that the constitution of adequate legal structures and the process of informal sector integration go hand in hand. The adaptation of laws, regulations and bylaws at federal, state and municipal levels to the requirements of a successful integration process paves the way for further developments (Gerdes and Gunsilius, 2010). In advice to Solid Waste Management, the experiences of informal waste management activities can be fed into policy processes in several ways:

#### 4.1.1 Action learning and scenario modelling

Action learning has been one way of making the work of informal waste workers known to decision-makers. Similarly to the recognition of informal recyclers as a profession and inclusion in official statistics described below, action learning initiatives can improve the information available about the sector. In addition, they serve to initiate an exchange with decision-makers about the potential benefits of integrating these workers. The elaboration of scenarios is an efficient instrument for analyzing the importance of IS activities for the functioning and improvement of the SWM system and can be used for making municipalities aware of the usefulness of the IS.

The GIZ-funded study about the economic impacts of informal sector activities analysed the quantities of waste handled by informal and formal stakeholders, their interlinkages and the specific costs of their operations (Scheinberg, Simpson, Gupt et al., 2010). In five of the six cities, the activity of the informal sector resulted in a much higher recycling rate at a much lower cost than the activities of the formal sector. This experience served for establishing a better knowledge about the activities of the informal sector, their scope as well as their economic, social and environmental impacts. Municipal decision-makers have been involved in the development of scenarios analyzing the economic impacts of restricting informal waste management activities or integrating informal stakeholders into the solid waste management system. The study shows that already the process of analyzing different scenarios together with advocates of the informal sector and municipal decision makers can have an important impact on the way these decision-makers conceive and consider the work of informal waste workers.

In the Philippines, the data on Quezon City from the study were a major starting point for and a data basis in the elaboration of a national framework for the integration of the informal sector, supported by UNEP (Solid Waste Management Association of the Philippines, 2009). The National Solid Waste Management Commission that is currently elaborating the National Solid Waste Management Strategy has been very active in the elaboration of this framework and demonstrates a vivid interest in good experiences from pilot projects to implement successful approaches.

## Recognition of Waste Picking as a Profession in Brazil and Its Impacts

By Sonia Dias, sector specialist at Women in Informal Employment Globalizing and Organizing (WIEGO), active in the waste management field in Brazil since 1985 with a focus on promoting the integration of social inclusion aspects into the technical planning of waste collection and recycling.

For years, one of the main demands of the National Movement of Waste Pickers (MNCR) in Brazil was to have the activity of collection of recyclables recognized as a profession. In 2002 the Brazilian Government responded to this demand and the work of waste pickers, known in the country as *catadores*, was identified as a specific category in the Brazilian Classification of Occupations. In this classification, an informal collector of recyclables is called *catador de material reciclável* (collector of recyclables) and its job description is: someone who might collect recyclables in streets or at disposal sites, work as waste sorter and/or other related activities either in co-operatives or junk shops.

This development made statistics on waste-pickers in Brazil available for the first time ever. As a result, national databases now include data on waste pickers: specifically, the National Household Sample Survey (PNAD) which provides socio-economical data on waste pickers both in formal and in informal employment<sup>1</sup> and the Annual Listing of Social Information (RAIS) which provides data on waste pickers formally employed by commercial establishments.

These databases include statistics on the distribution of waste pickers by federal units, sex, age, schooling, income etc. The data from the 2006 round of the PNAD (Crivellari, Dias and Pena, 2008), for instance,

show a total of 229,568 waste pickers<sup>2</sup> in the country: 67% were men, 33% were women 10% were children (10-16 years of age). The largest concentration of waste-pickers is in the state of São Paulo. The 2006 round of the RAIS, found 11,781 waste pickers with contracts: 80% were men and 20% were women. Data also show that men earn much more than women in all age groups. In age groups with higher earnings, those receiving between 3 and 4 times the minimum wage, 98 per cent are men and only 2 per cent are women.

Analysis of these new data, show the segmentation within the occupational category of waste picking. One type of waste-picking that has emerged in recent years is a waste picker with a contract. Such workers are mainly in junk yards or in the metallurgical industrial sector. Two additional types make a living picking recyclables on the streets or in waste dumps: 1. the non-organized or autonomous waste pickers disconnected from representative organizations who sells waste to junk shops; and 2. those who are "organized" and work through co-operatives and associations.

In sum, the inclusion of a special category for waste picking in the Brazilian Classification of Occupations (CBO) enables the identification of these workers in the basic sources of employment data in the country, as well as information on their earnings and employment and socio-economic characteristics. The new data together with their wider availability in official databases provides for the better design of policies towards integrating waste pickers in the national poverty reduction strategy. Inclusion in official statistics is a key sign of the greater visibility and recognition waste pickers have achieved in Brazil.

1 The distinction of formal and informal in Brazil is directly linked to a body of legislation called CLT that contains rules for fair labour relations, which includes, work hours, minimum wage and other rights. Formal workers are those who are employed through a contract registered in a specific document called *carteira de trabalho* (CT). Informal work under Brazil's definition would be workers without a CT plus own account workers and unpaid workers. With the inclusion of waste picking as profession this meant that waste pickers can be formally employed by commercial establishments.

2 This number contrasts with guestmates of the MNCR of 800,000 waste pickers. The 2010 Census will for the first time be able to record information on waste pickers which will be useful to complement PNADs.

In the process in Romania, the action learning exercise did not result in a more integrative strategy of the municipality, but in a partnership with the formal private waste management service provider who established a partnership with informal waste pickers on the landfill in Piatra Neamt in the North-east of the country.

#### 4.1.2 Integration of IS in waste management planning

In view of its integration in the formal SWM-system, the IS has to be considered already in waste management planning. The process of elaboration of a solid waste management plan is a particularly good opportunity for considering the role of the informal sector for several reasons:

- For the elaboration, the current situation in all aspects of the waste management system is analysed, thus the interlinkages between formal and informal activities can be made visible.
- For the waste management plan, an overarching vision and strategy is elaborated. On this occasion, the potentials of strengthening recycling systems and the significance of informal stakeholders in recycling management can be analysed in detail.
- Planning processes are often participatory where multiple stakeholders participate in consultation processes and the formulation of strategic orientations. This is an opportunity for stakeholders that had before been ignored to make themselves heard and be recognized as an important stakeholder.
- In some planning processes, environmental or poverty impact assessments (PIA) are conducted, according to national regulation of donor requirements. Elements of this methodology approved by OECD DAC are useful



Worker in Brazilian co-operative ASMARE (Photo: Sonia Dias)

to analyse the impacts of waste management strategies on poor informal workers. GIZ elaborated impact hypotheses for waste management plans on the informal sector within this methodology that could be a helpful tool.

Integration of IS representatives in municipal waste management planning processes has been pursued in several solid waste management programs on the local and the national level supported by GIZ and other organizations:

#### Some hypotheses about impacts of SWM policies on the informal sector that should be considered in SWM planning

- \* Privatisation and mechanisation of waste collection as well as payment by disposed quantity may reduce access of the informal sector to waste and therefore destroy many employment opportunities in the informal sector.
- \* The interdiction of waste recovery can raise the burden on poor waste pickers through fines and bribes that have to be paid to officials.
- \* A collection provider also involved in recovery provides a more regular collection service because of its interest in using waste.
- \* Recycling of waste may reduce production costs for local industries.
- \* Organisation, formalisation and micro-finance for waste pickers and recyclers leads to more balanced incomes among organised waste workers.
- \* Integration/acceptance of informal sector recycling creates/formalises many jobs (labour intensive sector).
- \* Subsidies to informal recyclers can make social welfare payments needless and thus relieve public budgets.
- \* Extended recycling makes more peri-urban land available through reduction of needed landfill space.
- \* Regulating waste sorting/recycling by waste pickers can reduce local pollution.
- \* Infrastructure facilitating waste sorting (separate collection, recycling centres, transfer stations with secured sorting space) reduces health risks for informal workers.

Source: GTZ, 2009

- The organisation of “**waste and citizenship forums**” held in **Brazil** following a UNICEF campaign on limiting child labour on open dumps: The forums were first organized at national level and then adopted on state and local level. Its principles were inspired in progressive policies in cities such as Belo Horizonte’s. They included waste picker representatives, representatives from government agencies, and NGOs. The involvement of the Prosecutor’s office incited many mayors to give priority to the issue of informal sector integration. The Ministry of the Environment and the Ministry of the Cities have included as a pre-condition for funding in the solid waste field the compliance to the social criteria set out by the National Forum (Dias and Alves, 2008).
- In **Costa Rica**, GIZ advised the elaboration of the national **Solid Waste Management Strategy** and, in parallel, supported the formulation of municipal solid waste management plans. In discussions of the National commission in charge of elaborating the strategy, the integration of the informal sector was chosen as one of the priority areas and included in the national solid waste management strategy (Programa CYMA, 2008). As Costa Rica projects to become a carbon-neutral economy, recycling and reduction of waste receive a particular attention. Approaches to facilitate small-scale recycling solutions can be one important element in a successful recycling approach. In the elaboration of municipal solid waste management plans in selected municipalities, the facilitation of recycling systems also received a particular importance. On the one hand, exchange meetings with womens’ groups active in recycling were organized. On the other hand, tools to analyse the economic feasibility of recycling activities were used to plan measures to extend recycling. The setup of buy-back, sorting and recycling centers managed by female small enterprises was an important element and is currently prepared in several municipalities.
- In the elaboration of a **municipal master plan** for solid waste management in **Maputo**, GIZ supported strategic planning and an analysis of the most appropriate system for the Mozambican capital. Informal service providers in peripheral areas were taken into account when designing a system based on private sector participation. The analysis of different collection options with regards to flexibility, appropriateness to the physical

**Table 4: Strategic Action on Informal sector integration in National SWM strategy, Costa Rica**

STRATEGIC ACTION No. 22: Integrate the informal sector into Integrated Solid Waste Management		
OBJECTIVE	Creation and training of micro-enterprises, formalisation of informal sector in solid waste management or support in other areas through public and private social programs	
INDICATOR	Persons currently working in integrated solid waste management continue to have access to employment in the future.	
INTERMEDIATE RESULTS	Completion	Responsibility
The informal sector and micro-enterprises are officially recognized in national and local policies	2010	Coordination Unit for the implementation of the Plan (UCIP)
Micro-enterprises or co-operatives are created and work as solid waste managers.	2010	UCIP
PROPYME and state banks finance sorting centres and micro-enterprise projects; a system of micro-credits is established.	2010	UCIP, Ministry of Economy, Industry and Commerce
Continuous training for micro-enterprises in ISWM.	2010	UCIP, National training institute
The micro-enterprises have organised (e.g. in an association).	2012	UCIP
<b>KEY POINTS:</b>		
* It is necessary to establish an inventory of the current situation of the informal sector in solid waste management and a registry of existing initiatives.		
* It is important that micro-enterprises and co-operatives not only work as managers in ISWM, but as an integral part of municipal SWM, integrating them in municipal plans and specific social programs to create the necessary productive linkages.		
* Special public and private programs for the support of innovative activities of micro-enterprises exist (e.g. recycling)		
* Alternative employment programs have to be created by public (Ministry of Employment) and private institutions (churches, Foundations, associations, trade associations etc.).		

Source: Programa CYMA, 2009





Primary waste collector in Maputo suburb (Photo: GIZ)

characteristics of the quarters, efficiency and costs showed that non-mechanised primary collection would be the best solution in the suburban areas. The informal collectors were supported in registering and applying for the public tenders for collection zones. In addition, the master plan put a focus on improved recycling systems, including collaborating with a plastics processing center managed by an association of former dumpsite waste pickers.

- Taking into account the informal sector is particularly important when a process of reorganizing the solid waste collection and disposal system is under way, and

when new infrastructure is planned. Privatisation of waste collection or new operating mechanisms and rules for sanitary landfills can exclude informal workers from access to materials, and this can create conflicts and inefficiencies in the system. Therefore, GIZ and KfW Entwicklungsbank jointly elaborated a concept for taking into account more systematically the informal sector in the preparation and implementation of projects supported by the **financial cooperation**. This includes, in the most favourable case, the recognition already during the strategic planning of the SWM sector in the country, and complementary action by financial and technical co-operation. But also during a feasibility study for a sanitary landfill, number and importance of informal workers should be analysed and options for their integration into a new collection and disposal system should be developed. During implementation, the financial cooperation can either conduct an “accompanying measure” itself or coordinate with other actors as technical cooperation or NGOs to support the organisation and partnership of informal SWM actors with the municipality. Adaptations to logistics and infrastructure could include collection systems where informal stakeholders can intervene in a controlled manner or are contracted by municipalities, and transfer stations or sorting stations at landfill sites that permit informal stakeholders to sort out materials safely or that are directly managed by them.



Policy making for Solid Waste Management should include all relevant stakeholders

### 4.1.3 Feeding pilot experiences into national policies and legislation

Testing approaches and feeding in pilot experiences into national policy making processes and legislation is a proven strategy in development cooperation in the solid waste sector. In many cases, it needs good practices to prove to decision-makers that an approach is viable. GIZ projects often work on several levels and combine pilot projects on the local level with accompanying the elaboration of public policies and guidelines. This can facilitate the dissemination of new approaches on a national scale, as is happening in the management of electric and electronic waste in India:

In India, pilot projects to support informal recyclers of electric and electronic waste have been conducted. Studies on e-waste recycling showed that 95% of electronic waste was recycled by the informal sector, but that the formal and the informal recycling sector partly intervened in the same domains. The studies concluded that a division of labour might be more efficient. The informal stakeholders should assure collection and dismantling of devices, while recycling should be reserved to formal recyclers with appropriate equipment and processes. Informal dismantlers and recyclers were brought in contact with formal recycling facilities to which they could provide pre-processed materials. On state level, an e-waste agency (EWA) was founded that re-groups informal and formal recyclers as well as government bodies. As the importance of the informal e-waste recycling sector in the value chain became obvious, measures to involve informal e-waste recyclers were integrated into the national Environment Policy and into national Guidelines for the sound management of e-waste (Ministry of Environment, Central Pollution Control Board, 2008). The guideline encourages the upgrading and formal recognition of the informal recycling units as they offer cost-efficient and labor-intensive dismantling and sorting of e-waste. In the national policies, it is thus stipulated that informal recyclers should be supported to formalize.

Regarding municipal solid waste management, the state of Maharashtra in India has issued regulations facilitating the inclusion of informal waste workers, based on mobilization and projects for the inclusion of informal workers in Pune and Mumbai. Stipulations concern the issuing of identity cards to waste collectors and to contract waste picker organisations for waste collection (SNDT and Chintan, 2008).

## 4.2 Strengthening the organisational capacities of the informal sector

### Strengthening Waste Picker Organisations

By Sonia Dias, sector specialist for WIEGO–Women in Informal Employment Globalising and Organising

Since the 1990's, waste pickers in many Latin American countries have been actively organising themselves into local associations and/or co-operatives, federations, national co-operative movements and a network, as reported by many researchers (Dias, 2008; Fernandez, 2008; Samson, 2009). The extent and depth of waste picker organisations varies across the LA countries as does the level of their integration into formal SWM systems.

The first membership-based organisation (MBO) in the continent was founded in 1962 in Medellín, Colombia. However, it was only in the 1980s that co-operativism began to take shape there, with the NGO Fundación Social acting as catalyst. Brazil has seen an increase in the number of waste pickers organised into co-operatives and/or associations since the late 1980's, and this is reflected in the greater support these organisations have received from different levels of government and the private sector since 1990. NGOs linked to the Catholic Church began the process of organising waste pickers in the main capitals of the South and South-East regions. The commitment of NGOs to pastoral work with the urban poor was one of the main drivers for the formation of the first waste picker MBOs. In Brazil, socio-environmental concerns, such as upgrading existing systems and income generation for the poor, prompted municipalities to integrate waste pickers. Furthermore, under UNICEF's leadership, a National Forum entitled Waste & Citizenship was launched and contributed to the visibility and integration of waste pickers within the country's SWM sector.

Measures in support of waste picker co-operatives/associations across the country have been most comprehensive in this region. These measures may be classified into three core dimensions (3Rs), as follows:

- 1) Recognition through the policy framework adopted in Brazil towards associations and co-operatives including, amongst others, Law 11.107 passed in 2005, which entitles municipalities to conclude agreements with MBOs; Decree 5940 "Coleta Seletiva Solidária" passed in 2006, which stipulates that all federal institutions must donate recyclables to waste picker organisations; and the National Policy of Solid Wastes, ratified in 2010, which makes inclusion of waste pickers in the reverse logistics system (related to the reuse of products)

mandatory. To this end, fiscal and financial incentives must be made available for recycling industries and for the development of regional programmes in partnership with co-operatives/associations, in addition to financial support for the structuring of these organisations<sup>1</sup>.

- 2) Representation through innovative forms, in order to increase the voice of MBOs. Participatory forums have been created and waste pickers have come together to form the National Movement of Waste Pickers – MNCR (Dias, 2006). Funds from government and non-government entities at different levels have been made available for capacity-building courses for waste picker organisations (Dias and Alves, 2008, Dias, 2009).
- 3) Rights to redistribution through policies recognising waste pickers as legitimate actors and providing them with resources. Funds are being disbursed to the sector for recycling warehouse infrastructure and direct credit lines are being made available to co-operatives/associations. Many social programmes targeting waste pickers have been created.

The Brazilian integration scenario is a demonstrative model that has helped in the creation and strengthening of waste picker organisations in other Latin American countries and of the Latin American and Caribbean Network of Waste Pickers (LAPWN), consisting of 15 member countries.

Colombia has also been an inspiration in the region. The organising process in this country goes back as far as 1962 when the first co-operative was created in Medellín (Fernandez, 2009). The 1990s saw the creation of the ARB (the association of recyclers of Bogotá) and the ANR (national association of recyclers). 2009 saw a major breakthrough with waste pickers winning a legal battle guaranteeing rights to recyclables for the waste pickers of Cali<sup>2</sup>.

A more recent development has taken place in Peru with the sanctioning by the Peruvian President, in June 2010, of Law 29.419, which was developed in conjunction with waste picker movement representative. It establishes a normative terrain for activity carried out by waste pickers and promotes capacity building and formalisation (via co-operatives) of informal workers. This is expected to strengthen waste picker organisations in the country.

<sup>1</sup> For an assessment of the legal framework focused on social inclusion in Brazil and the newly approved National Policy, see "Overview of Legal Framework for Social Inclusion in Solid Waste Management in Brazil" at [www.inclusivecities.org](http://www.inclusivecities.org)

<sup>2</sup> See CIVISOL note on this case on [www.civisol.org](http://www.civisol.org)

Interactions between Latin American waste pickers date back to 1993 with the first international congress organised by the ARB in Colombia, in which representatives from Peru and Mexico took part. In 2003, the First Latin American Congress took place in Caxias do Sul, Brazil, and a number of events ensued in the following years. The networking initiated helped to showcase the experience of organisation and integration and served as an inspiration to nascent movements.

Links between waste picker organisations/NGOs in Asia and Latin America were first forged in 2006 with the participation of NGO activists from Egypt and India at the Waste and Citizenship Festival in Belo Horizonte, with funding from the Collaborative Working Group (CWG) on Solid Waste Management in low and middle-income countries. In partnership with its waste picker member organisations, WIEGO facilitated the international networking of informal solid waste workers. With the help of the AVINA Foundation and CWG researchers and activists, links were forged between Latin American and Asian waste picker organisations. This interaction resulted in the joint organisation of the First World Conference and Third Latin American Conference of Waste Pickers, held in Bogotá, Colombia in March 2008 (Bonner, in Samson 2009).

Since 2008, "...as part of a larger 5-year global project on Inclusive Cities, SEWA, the Latin American Movement of Waste Pickers, the trade union of waste pickers in Pune, India (KKPKP), AVINA and WIEGO embarked on a project to strengthen the organisation of waste pickers in Africa, Asia, and Latin America. A key component of this programme involved forming relations with waste pickers in Africa and Asia – regions that were underrepresented in Bogotá." (Bonner, in Samson 2009).

It is clear that there is a trend towards replacing repressive policies on waste picking with inclusive policies focused on legal backing, redistributive measures and social recognition of informal recycler organisations in various countries of the Latin American region. This in spite of the huge challenges that lie ahead in terms of consolidating of waste picker recognition. Strengthening the organisation and organisational capacity of waste pickers enhances their Voice, Visibility and Validity and improves their livelihoods, working conditions and status. Through such developments, waste pickers can contribute to building more robust and sustainable solid waste systems, the reduction of carbon emissions and a cleaner and healthier environment for everyone.

The above description of efforts to organise the informal waste sector in Latin America shows that organising and policy-making towards the recognition of informal activities (described in Chapter 4.1) are closely linked. Informal worker organisations can press for more inclusive policy frameworks while political regulations favouring integration and supporting informal stakeholders mostly apply to informal worker organisations rather than individual workers. Informal waste sector organisations take different forms, such as community-based organisations, co-operatives, associations, labour unions, etc. As informal waste workers are often marginalised, depend on a minimum daily income for their survival and thus have no safety net, the sector is often characterised by strong competition and mistrust between workers. Such mistrust must be overcome in the process of creating organisations.

#### 4.2.1 Benefits of organisation

Forming an organisation and becoming a member offer a large number of advantages to IS actors. Membership in such an organisation allows the limitations and restrictions of individuals (low level of schooling, lack of experience in collaborating and negotiating with business partners and public authorities etc.) to be overcome. IS organisations offer their members opportunities to improve their working conditions, increase their income and access services such as health insurance and micro-credit. These organisations are also important instruments for exchange of experience, coordination and increased sector “visibility”.

Informal workers often find their niches in exploiting materials whose value has not yet become evident to formal stakeholders or which cannot be profitably exploited by these actors. As soon as the economic potential is recognised by formal actors, they will try to restrict informal sector access to these materials. Informal workers can prepare themselves for this competition by forming organisations, and at the same time present themselves as reliable partners for other actors in a recycling economy. Organising allows the negotiating position of IS actors with other stakeholders in the value chain to be enhanced. Organisations can sensitise and inform municipalities and the general public about the importance and contribution of the IS to the cleanliness of cities and to conservation of the environment and thus improve the social status of informal workers.



Recicla: Recyclers' cooperative in Maputo (Photo: AGRUSU)

Registered organisations are essential in terms of integrating the IS into the (formal) SWM system. Such organisations deal directly with municipalities. Municipalities generally do not sign contracts and covenants with individual IS workers, but may be willing to enter into partnerships with their organisations, as these present a single and more reliable interlocutor than a multitude of informal and often unstable workers. In Brazil, for example, various co-operatives have concluded contracts or covenants with municipal governments for collecting the recyclable fraction, for sorting recyclables delivered to sorting centres by service providers, or for the provision of other waste management services (Dias and Alves, 2008).

#### Important functions of IS organisations

- \* Mobilisation and organisation of waste pickers and small junk dealers
- \* Creating an identity for their members (“environment professionals”)
- \* Support for their members in establishing networks and exchanging experience
- \* Provision of services to members such as access to micro-credit, health insurance, training, opportunities to exchange experience
- \* Sensitisation and information of public authorities (“the invisible sector becomes visible”)
- \* Lobbying and representation of members' interests
- \* Official partners of municipalities for provision of services and collaboration (integration of IS)

Source: Gerold, 2009

#### 4.2.2 Common ground for organising: trust-building and a shared vision

Designing the organising process appropriately also involves refraining from creating organisations prematurely. In a GIZ pilot project in Chile, informal street pickers involved in a partnership with an international steel producer chose not to set up a co-operative, because they had had negative experience of joint financial management. In such cases, franchising systems or other partnerships with junkshops or recycling enterprises enjoying the trust of informal workers can be a step towards further integration into the formal system. However, it must be borne in mind that individual franchising or accreditation schemes often require higher education and negotiation skills on the part of the informal workers than collective integration schemes.

Various waste picker co-operatives supported by development cooperation have disintegrated in time because of insufficient trust between members, proving that transparency and confidence-building are very important in the organising process. Participation in group training and regular meetings can nevertheless contribute to building trust between informal workers, a precondition for possible later organisation. An important element in the successful development of IS organisations has been initial trust-building efforts supported by other actors. In the pilot projects, this role has been played by various stakeholders: by employees and decision-makers of the municipality, individual private sector actors and the project team in the Philippines; by NGOs and church-based organisations in Brazil or Mozambique; and by women's organisations in India.

#### Finding an inclusive and efficient model for organising waste pickers in the Philippines (Iloilo City)

Since 2005, the municipality of Iloilo and GIZ through the consultancy group AHT have begun to re-energise a waste picker group on the disposal site of Iloilo. Based on a Social Development Programme for 140 waste pickers, a group was formed to participate in pilot activities. Workers for the pilot activities were selected according to their willingness to join the proposed waste reclaimer association and according to their involvement in previous joint activities. Training on sewing recycled design bags, pilot activities for sorting out alternative fuel resources (AFR) in co-operation with cement manufacturers HOLCIM and alternative livelihood activities were initiated. Several sub-groups were formed according to these activities and leaders were elected for each.

The group registered as a formal incorporated association entitled UCLA Inc. (Uswag Calajunan Livelihood Association Incorporated) in May 2009. The stature of an incorporated body, with its own rights, privileges, and liabilities, was chosen by the workers because the registration process was simpler, less costly and more rapid than for a co-operative. Furthermore, as an incorporated body, the group is able to sign official contracts with project partners—an important prerequisite e.g. for further collaboration with Holcim or other private entities.

In order to cover the registration costs, membership fees were determined: first at 100 pesos per year and then, following a decision by the members in March 2010, at 30 pesos per month, a fact that demonstrates the improved income level of the workers and the importance they now attribute to common activities. They also agreed on rules for joint work at the dumpsite, e.g. not to allow any more children to work on the disposal site, or to control practices such as drinking alcohol or bringing weapons to the site. The formalised group also opened a bank account to facilitate payment procedures. UCLA now has around 150 members and has initiated a number of new income generating activities. Regular assemblies of all members and an annual Christmas party serve the purpose of maintaining and strengthening a common identity as a group and a consensus about the structure and activities of the organisation. It has also established a training centre and conducted further social activities such as childcare and health checks.



UCLA members selling recycling products (Photo: Ellen Gunsilius)

Clear common understanding and communication of the role of informal waste workers and their future prospects are further important elements in the sustainability of informal sector organisations. Organisations based mainly on hope for external support will not survive the project duration. A clear common development perspective as social and economic actors must therefore be developed among members, and their own resources for improving living and working conditions must be mobilised.

#### 4.2.3 Inclusive, flexible and transparent design of IS organisations

An important question to be addressed is the form of organisation. The rules, regulations and denominations of organisational forms differ from country to country. Associations are often non-profit oriented organisations; co-operatives or small companies have different rights and duties regarding registration, taxes etc. The most frequent forms chosen by informal sector workers are associations or co-operatives, as these often require only a minimum of registration effort and give the workers flexibility in internal work organisation. Group members organise collection or sorting activities among themselves according to their (financial) needs and availability. If one of the members cannot work on a specific day, s/he is replaced by another group member. The most appropriate form of organisation depends on the regulatory framework in the specific country. For South Africa, for example, WIEGO (2010) presented the implications of different organisational forms and the rights that these provide to waste workers. Legal and organisational advice has also been an important part of GIZ support to informal sector organisations.

The transparent and participatory set-up of IS organisations is very important in preventing domination by individual stakeholders keen to control access to waste rather than improve members' income-generating opportunities and living conditions.

#### Recicla – co-operative of former dumpsite pickers managing a plastic recycling centre in Maputo

Around 600-700 waste pickers were working on the unmanaged dumpsite of Maputo in 2004. In order to improve the waste recovery and the working conditions of these workers, a joint initiative was established between

Caritas, the Italian NGO LVIA and the programme AGRESU of GIZ and the municipal government of Maputo. A group of 12 workers was formed and a plastic waste recycling centre was inaugurated in 2006. A contract with the municipal government allowed the use of the site for the recycling centre.

Recyclable plastic materials brought by waste pickers are weighed, cut into pieces, cleaned, dried and shredded in a simple shredder. This material prepared for further processing in the local plastics industry constitutes a valuable secondary raw material for such industries and helps the members of Recicla earn a much higher income than is the case with waste materials.

The workers received a literacy course and introductory training for the operation of the recycling centre, while the director of the recycling centre and two other women were given accountancy training. In order to make a considered decision on the official status of the Recicla group, AGRESU commissioned a legal consultant to analyse strengths and weaknesses and assess the options for official registration of the group. The members opted to register officially and chose co-operative status.

Recicla has already acquired some experience as a registered co-operative. The workers had to deal with the issue



Recicla member cleaning plastic foils (Photo: Ellen Günsilius)

that added value tax payments became necessary due to their new status, but they managed to comply with the new requirements. There are currently 18 workers and 4 casual workers at Recicla, 10 of whom are women. The co-operative is organised into three committees (production, administration and social issues), who discuss decisions regarding the work organisation and environment. During managerial absences, Recicla members manage daily operations and business relations with client industries, but are lack sufficiently capacity to conduct marketing activities.

The centre currently processes around 15 tons of recyclables every month. Members now receive the official minimum monthly wage of 2050 Mozambican MT, benefit from registration to the social security system and receive a bonus at the end of the year according to production. Recicla has also set up a social redistribution fund to cover extraordinary expenses by members or guarantee payment for up to 6 months in case of poor sales.

In order to make further progress, the co-operative has established business relations with companies seeking other plastics materials, e.g. film plastics and PET. They also linked up with an association that has created a collection point for recyclables in the city. Such collection points are expected to become more important for recycling stakeholders once the current dumpsite is no longer operational (possibly in 2014). Challenges remain with regard to efficient autonomous administration, financial management and the entrepreneurial dynamism of Recicla co-operative workers.

### 4.3. Strengthening the informal sector as an economic actor

#### 4.3.1. Business management

Informal waste workers may be individual workers, small family enterprises or medium enterprises. The fact that they often act outside the legislative framework, work individually or do not have much experience in management issues should nevertheless not obscure the fact that these workers are actually economic actors who excel in exploring and exploiting economic opportunities overlooked by others. They are either active in buying and selling recyclable materials, operate as service providers for collecting waste and recyclable materials from

“In the Private Sector Development Programme in Egypt, we support the private industrial sector in environmental services and technologies through the development of business and the legal framework. The informal plastic recycling sector has been selected because it is a vibrant and enduring industrial sector, although it lacks a supporting regulatory framework.

When working with informal plastic recycling enterprises, characteristics common to all informal enterprises of any other sector such as food or textiles emerge: they lack managerial skills as they do not follow conventional book-keeping systems; their products are often of low quality; and they therefore have very limited access to finance and markets. However, the unique characteristic of the sector is that unregulated informal plastic recycling results in polluting the immediate surroundings and the whole business is thus seen as environmentally unfriendly by governmental organisations.

The initiative started when we succeeded in convincing the Chamber of Chemical Industries to invite informal recyclers’ representatives for the first time to the chamber board meeting to advocate their position and thus use the lobbying power of the chamber. It was a win-win situation. During the discussions, it became clear that plastic recycling is part of the plastic manufacturing value chain, reflected in the willingness of members to facilitate the formalisation of the recycling sector in order to guarantee the quality of their raw materials. Now with chamber support, agreements with the Industrial Development Authority and Egyptian Environmental Affairs Agency are being developed that recognise the sector and will facilitate its formalisation. A door has been opened.”

Wael Sabry, GIZ advisor in the Private Sector Development Program, Egypt.

households or companies, or have set up small recycling workshops for processing materials. They therefore require the same (technical, financial and management) capacity and services as formal enterprises. However, informal actors are mostly excluded from these services because they lack the necessary legal status.

Training and support in the following fields are therefore important prerequisites for their success:

- technical processes and quality control
- health and safety and environmental standards
- business management
- marketing
- financial management
- legal requirements and formalisation procedures
- access to credit and
- networking with stakeholders from the formal private sector

In Costa Rica, a broad training programme was designed to support small enterprises of women's groups active in sorting, selling, and processing waste materials. The training programme was conducted together with the Cleaner Production Centre, the Institute of Enterprise Excellence, the External Commerce Promotion Centre in Costa Rica (PROCOMER) and a private consulting company. It covered various topics from sustainable development to legal requirements and from accounting and marketing techniques to human resources management.



Quantities processed and sold are registered at Recicla (Photo: Ellen Günsilius)

Training programmes and advice for informal waste workers face particular challenges. One such challenge is that workers are often illiterate, making training in business management, financial management, and legal requirements especially difficult. Many pilot projects therefore include tailored training modules for informal workers. In Mozambique, as mentioned above, workers took literacy courses alongside their work in the recycling centre. In many cases, an important element of training courses is information about health and hygiene in the working and living environment of informal waste workers.



Strong informal workers are stable entrepreneurs and reliable partners



Pilot projects and studies have shown that informal waste sector co-operatives have particular difficulties in assuring successful financial management, even after training, without external support. Integration measures must thus be prepared to accompany informal worker co-operatives over the longer term in order to ensure sustainable management. At the same time, it must be pointed out to co-operatives that they have to establish a viable business model and that external support is only provided for the start-up phase. The example of Recicla in Mozambique has shown that despite the initial elaboration of a feasibility study, the group counted too much on external support for a while and did not manage to cover all its costs. Only after a process of intense discussion and advice about the future evolution of the co-operative, the members started to share the vision of Recicla as a financially viable business.

#### 4.3.2 Diversification of activities and technical specialisation

The diversification of the groups' activities and the initiation of value-adding processes have in many cases proved to be good strategies in ensuring longer-term success. The above-mentioned case of Cairo, where traditional garbage collectors started plastic recycling enterprises, is one example. The Private Sector Development Programme in Egypt has identified informal plastics recycling as one of the most vibrant economic sectors, which contributes significantly to employment creation and moreover has an important impact on the environment. Even though many of these enterprises are very successful, the quality of the recycled products is often poor. The GIZ



Plastic recycling company in Cairo (Photo: Anja-Sigrid Schwetje)

programme therefore developed technical training in order to improve sorting, crushing, palletising or agglomeration processes and was very well received by the informal entrepreneurs. In Brazil, the sorting centres managed by recycler co-operatives treating source-segregated waste are an example of the same approach. Higher-value (source-segregated) materials are sorted, cleaned and processed more professionally in order to earn better prices in the value-chain. The experience of Recicla in Mozambique confirms that it is possible to integrate former dumpsite pickers at a higher level in the value chain, directly selling pre-processed materials to local industry.

In some cases, groups of informal workers, with GIZ advice, have also developed alternative livelihood options. Co-operatives in Brazil were contracted by municipalities to manage public toilets or provide public cleansing services and thus assured a complementary revenue source (Dias and Alves, 2008). In addition to sorting and selling recyclable materials, for example, the UCLA association in the Philippines also started to produce compost, use recyclable materials for the production of artisanal products (bags, jewellery) and consolidate alternative fuel resources. It was an important element of GIZ advice to track the production costs for different products and determine the product price in accordance.

In some cases, technical specialisation can be of particular importance, for example in specialised fields such as the recycling of electric and electronic waste. As these materials contain many hazardous substances, appropriate



Formalized e-waste recyclers in India with "good housekeeping" wallpaper in the background (Photo: Henning Schreiber)

processes in dismantling, recycling and elimination of residuals are key. A GIZ project supported informal recycling workshop training on electric and electronic health and environmental hazards. Simple management measures of “good house-keeping” were implemented, increasing health and safety standards as well as environmental improvements; these measures are also often economically viable because they can reduce costs (Arlinghaus, 2007). Moreover, the training programme involved the introduction of a certain division of labour, leaving toxic substance removal processes to specialised recyclers.

This shows that some recycling activities require diversification, while others may require specialisation; supporters must therefore analyse the most sustainable business models in each case together with informal recyclers. The value chain approach is helpful in this undertaking. The Private Sector Development Programme in Egypt analysed the plastic recycling value chains in Cairo and Alexandria. The study shows that an approach to increase the rates of return is to expand the range of recycling processes a recycler performs, and it gives recommendations for the recycling of different plastic materials (Staffeld, 2010).

#### 4.3.3. Formalisation

The Private Sector Development Programme in Egypt engaged in dialogue with informal recyclers on the advantages and obstacles to formalisation of their enterprises and initiated a process with local and national governments to facilitate their formalisation. First, the importance of the informal recycling sector for job creation was pointed out to the government. As the Egyptian government had just formulated ambitious job creation goals, the objective of formalising existing jobs in recycling was welcomed. The interests and concerns of the stakeholders involved (enterprises and administration alike) and obstacles to formalisation were analysed and discussed and the formalisation process was mapped and adapted. For example, different licenses were conceived for various kinds of recycling activities, so that not all recyclers needed to fulfil detailed requirements. The registration requirements were then communicated to informal enterprises. A setback was that public guarantees to refrain from sanctioning enterprises during the formalisation process were not respected. New efforts to re-establish relationships of trust between enterprises and authorities therefore had to be instigated.

The GIZ programme working with informal e-waste recyclers in India also supported formalisation processes, but in a different way. Dialogue with e-waste recyclers and authorities identified appropriate and safe infrastructure and equipment as an important prerequisite for an integration model, which led to the merger of several small recycling workshops into a specialised company located in an industrial area. After a long process and much advice on internal business management structure and formalisation procedures, the company was finally founded in 2010. Six small dismantling workshops in Bangalore agreed to a new division of labour and joined together with other workshops to register a formal company. The new company E-WaRDD now has trained personnel and suitable equipment for the safe dismantling of electronic waste. It has established a business relationship with a formal e-waste recycler. The company is now treating 2 tons of e-waste daily in accordance with environmental standards (Payattati, 2009). This model of registering formal e-waste recycler companies is currently being applied on a broader scale in other Indian cities.

The professionalisation of informal entrepreneurs in business and financial management has involved systems that are small-scale and simple and should lead to the creation of longer-term partnerships with local entrepreneurs, NGOs or universities in order to be sustainable. Opportunities and examples for these kinds of partnerships are explored in the following chapter.

#### Interview

with Nader Abdel-Hady, Small Industries' Modernisation Association (SIMA), Egypt

#### How did you get involved with the informal recycling sector?

I started with a company active in shredding and recycling plastics and film materials. Later on, I turned to manufacturing, but as my suppliers were often informal recycling enterprises, I stayed in close cooperation with them. As the chamber of commerce and the chamber of industry do not represent the interests of small enterprises, I created the Small Industries Modernisation Association (SIMA) to give a

voice to these enterprises. We now comprise 20-30 companies, and we cooperate with GIZ and other institutions in order to provide training, support for marketing or for securing financing, e.g. low interest rate loans for our member companies. It is not a condition to be formally registered in order to be a member, but advocating for and facilitating formalisation is an important union goal.

**Do you see it as possible to formalise the informal recycling sector? If yes, what would this formalisation require?**

Small enterprises need to have a voice and to acquire rights by obtaining licenses etc. Informal companies sometimes cling to a “culture” of avoiding taxes, overheads costs associated with formal status, and social security payments. These objections are frequently based on misinformation about the regulatory framework. For example, taxes in Egypt are currently much lower than they were several years ago, so the negative impact of formalisation has decreased. Information and training on regulatory requirements are therefore very important, and should highlight the positive impact of formalisation: for example, that companies must be formalised in order to be suppliers of large companies, because these have to outline their supply chains in order to comply with ISO standards. Moreover, the formalisation procedures should be simplified.

**What opportunities for co-operation do you see between informal and formal enterprises?**

Co-operation is not about ‘opportunities’, it is obligatory for all formal and informal companies because they are all part of the same value chain. They are already working together—only the official requirement to formalise in one way or another is getting stronger because of the factors I mentioned. I would also like to include more informal waste management businesses in our association because they are also part of the value chain, not only the recycling enterprises. We are in dialogue with the Environment Agency EEAA and the Department of Industry in an attempt to find solutions to the fact that waste management stakeholders are driven out of residential areas without viable alternatives.

#### 4.4 Partnerships between the informal and formal private sectors

Partnerships are a key element to working successfully – not only in the waste management industry, although working together with multiple stakeholders plays a special role in this sector. First of all, everyone has some interaction with waste. Everyone produces waste – at home or at work – and is thus a consumer or recipient of a service such as waste collection (albeit not everywhere). Then there are the major waste producers (industry, businesses or even institutions) and the private or municipal service providers that collect, transport or treat and dispose of this waste. Interest groups such as environmental NGOs also play a crucial role. As a result, a complex landscape of stakeholders exists in which not everyone shares the same interests. Partnerships between certain stakeholders are self-evident, while others are not so immediately apparent. If we look at partnerships between formal and informal stakeholders, they tend to represent these less obvious alliances. Intermediaries often operate in the middle, purchasing material from waste pickers and selling it on to industry – making a profit in the process. Why should an organised company acting in accordance with existing rules work with small-scale informal groups that offer small volumes, use inefficient working methods and whose corporate structures are rather opaque?

In spite of these reasons, there exist excellent examples of why both sides have good reason to work together. The growing integration of the informal sector over the past few years indicates that a paradigm shift is in progress. The next section includes both an interview with an international expert and three models that highlight this shift.

##### Providing alternative fuel resources to cement production, Iloilo City, Philippines

The issue of informal sector workers was raised in connection with the aim of bringing the Calajunan dump (Iloilo City, Visayas, Philippines) into compliance with national law RA 9003. The legislation included a 25% reclamation target for recyclable materials, and the Japanese development agency JICA provided funding for a sorting plant, enabling some of these 300 waste pickers to be integrated into new operations. In addition to hand-made products made out of recycled materials, workers



UCLA members sorting AFR (Photo: Ellen Gunsilius)

extracted alternative fuels and raw materials (AFR) from the waste stream and sent them to the firm Holcim for co-processing in its cement plant. A test run estimated the amount that could potentially be delivered. First and foremost, this AFR consisted of materials that were difficult or impossible to recycle, such as lightweight packaging. The project began with 30 of the waste pickers who had formerly worked at the landfill, later increasing to 60 workers.

In addition to sorting out materials for co-processing, workers also extracted other marketable commodities to sell by themselves or together with colleagues in larger quantities. In 2009, they yielded around 17 tonnes of AFR each month.

The first partnership agreement in 2009 between workers, the city government, Holcim and GIZ stipulated that:

- The city government would cover the cost of transporting the AFR fraction from the sorting plant to the loading port in Iloilo;

- GIZ would provide technical advisory services and make a financial contribution towards buying a machine and holding workshops;
- Holcim would pay the workers' wages and cover the cost of shipping the material to the cement plant on the island of Mindanao.

All these agreements remained in effect until the new city government took office in May 2010. GIZ acted as a mediator between the parties when the arrangements were revised. The agreement has since been modified again so as to integrate the newly registered firm established by the former waste collectors – UCLA (Uswag Calahunan Livelihood Association), into the partnership and extend joint AFR extraction operations. Holcim guaranteed the purchase of 1,000 tonnes of AFR per year and the Iloilo city government committed to support UCLA's work, for instance by expanding sorting facilities, providing machinery and supplying sorting materials.

Success factors:

- Coordinating and cooperating with a variety of stakeholders (JICA, Iloilo City, Holcim, GIZ and UCLA),
- Political will on the part of the city government,
- A marketable strategy for the two private partners, UCLA and Holcim,
- Test runs to estimate the potential volumes, thus yielding clear data and
- Integrating suggestions for improvements put forward by UCLA.

#### **The informal sector as supplier of scrap metal for the steel producer Gerdau**

The Gerdau company, whose head office is in Brazil, signed a strategic alliance with GIZ in September 2009. This joint project aims to strengthen the organisation and entrepreneurship of groups working in the informal sector of the steel industry in selected Latin American countries. Other objectives include integrating these groups into the value chain systematically and profitably and under fair conditions, thus paving the way to formalisation of their status.

At present, most scrap collectors sell their wares to intermediaries who fix prices. These intermediaries often buy

scrap at lower prices and sell it at a considerable profit. Selling directly to industry is difficult for informal collectors for a variety of reasons. On the one hand, the volumes are small and many businesses set minimum order quantities. On the other hand, large businesses typically need to be issued with invoices, which the informal sector cannot provide.

Gerdau and GIZ are pursuing four approaches within this project:

- 1) Training scrap collectors and educating them in simple steel processing professions, as well as supporting their formalisation;
- 2) Supporting intermediary organisations (NGOs) and creating a multi-country network to exchange information and experience;
- 3) Developing and using a monitoring system along the steel value chain;
- 4) Integrating the results and experience into municipal and national policies.

One noteworthy feature of this approach is that, for Gerdau, supporting scrap collectors is presently evolving from a CSR measure to a task integrated into its core business.

An interview with Brazilian-German expert Anna Lúcia Florisbela dos Santos sheds light on her experience of private-private partnerships.



Waste collector in Kunming, China (Photo: GIZ)

## Interview

with Anna Lúcia Florisbela dos Santos, consultant with many years of experience working at the interface between waste management and the informal sector

- 1) What is your experience of partnerships between private formal and informal stakeholders in the waste management sector? What is your favourite example?**

Public sector stakeholders tend to be more aware of integrating the informal sector when managing waste. The private formal sector is generally reluctant. Informal workers are often factored in conceptually as part of efforts to secure contracts from towns and communities, but when it comes to implementation, many reasons can be found not to honour these commitments. Generally speaking, there is talk of paying minimum wages for structured working hours. However, this approach runs counter to the interests of informal workers who often earn more than the minimum wage and can choose their own working hours.

A primary example is the partnership between the public, private formal and informal sectors that led to the formalisation of informal groups operating recycling centres in São Sebastião in Brazil. The informal sector group became larger over time and then independent after one year of assistance. In addition to improved organisational structure and greater self-confidence, its members are in a stronger position to deal with private sector representatives, such as buyers of recyclable materials. A second example is a PPP project in Chile that provided training to selected groups from the informal waste management sector. This measure strengthened workers' confidence in particular. They are now proud of their uniforms bearing the emblems of their partners Gerdau<sup>1</sup> and GIZ, setting them apart from other informal workers and enhancing their social acceptance.

<sup>1</sup> A major steel producer based in Brazil, with offices in virtually all Latin American countries.

**2) As an economist, why would you advise a company to work with informal workers?**

First, partnerships with informal workers can put corporate social responsibility (CSR) policies into action.

Partnerships with informal workers can also yield benefits for companies' core business. [...] The skills of informal workers can be useful and have dual benefits. Returning to the example of Gerdau, on the one hand, the partnership with GIZ allowed the company to achieve its CSR objectives, such as helping to reduce poverty. On the other, it created a more stable business relationship between the steel group and the informal sector that provides the company with the raw materials it needs at fair conditions.

Breaking down opposition can also motivate a company to work together with the informal sector. Waste management contracts, for instance landfill operation agreements, often stipulate that a solution is found for existing informal sector workers. By integrating these people, companies acquire workers skilled in waste management and simultaneously reduce the potential for opposition to new landfill sites, which can incur significant additional costs if not resolved.

**3) In your experience, what are the greatest challenges in ensuring good partnerships? What are the factors for success?**

I understand good partnership to mean one that strives for sustainability as well as avoiding paternalistic action. [...] The informal sector must be in a position in which it can negotiate on equal terms with buyers or end customers as far as possible. Informal workers need self-confidence for this to happen, as they will be in a position to charge fairer prices for their recyclable materials only if the informal sector becomes appealing enough for the formal sector, if they are the only group that can provide the quantities of secondary raw materials that the formal sector needs, for instance. [...]

Selling recyclable materials together, in larger quantities, helps waste pickers to earn more. However, this presupposes that mutual trust exists among group members and that there is good organisation in place.

In this case, it is important to be certain of support over an adequate period of time, for instance from local governments. [...] In my opinion, the factors for success are:

- \* Eliminating paternalistic action;
- \* Fair remuneration for recyclable materials;
- \* Increased confidence among informal sector workers; and
- \* Training courses, as these offer people greater opportunities to find better sources of income both in the waste management sector and other areas.

**4) If you could change one thing to make it easier for the informal sector to work, what would it be?**

First, support for improving organisational structures.

Then preventing the weakest link in the waste management chain, the informal sector, from bearing the brunt of a waste policy that aims at separate collection for environmental motives. [...] Additional incentive schemes, such as lower fees, are necessary to motivate the public to sort recyclable materials in their homes. However, these lower revenues should not be offset at the expense of the informal sector, but rather by raising fees for those who do not sort their waste. Countries without waste fees must "reward" sorting efforts from national or local authority budgets.

Looking at recent examples from Brazil, it is clear that local authorities currently pass on the cost of motivating the public to waste pickers by paying less for the recyclable materials the latter provide (e.g. Niteroi: Reducing electricity bills based on the quantity of recyclable materials provided).

### Efficient business relations between a recycling centre and waste pickers: Wongpanit, Thailand

Wongpanit Co. Ltd., one of Thailand's leading recycling factories, was established in 1974. It initially worked in the rural areas of Phitsanulok, where the volume of collected waste per day at the time was only around 1000 kg. After buying a small junk shop in 1977, several extensions followed; in 1989 Wongpanit Co. Ltd. opened Thailand's first recycling plant. Today, it has 200 franchise branches in Thailand and Laos and sells recyclables to processing industries in Thailand and abroad. Wongpanit buys glass, plastic, scrap metals, paper, cardboard paper, e-waste, coconut shells, textiles, shoes and organic waste. It currently receives around 205 tons of waste per day from households, scavengers, collection crews, smaller junk shops, enterprises, schools, temples and franchising partners in the surrounding regions.

Wongpanit deals with material that can be sold to recycling manufacturing industries or further processed; plastic is therefore sorted into types and then compacted; paper is separated by type/colour and compacted into large blocks; bottles in good condition are sold to breweries etc. Wongpanit employs currently around 220 people at its head office in Phitsanulok, including disabled persons employed for simple tasks. After pre-sorting, further separation is carried out by skilled workers specifically trained to perform this job.

The company has several branches located at major street junctions in Phitsanulok; this strong visual presence enhances the status of the company in the mind of all concerned stakeholders. The daily prices for all recyclable materials are written in front of the company premises. Furthermore, a leaflet has been published offering information about waste recycling and its economic value and is distributed at the main entrance of large department stores etc.

The number of its branches has increased by using its specific franchise system. (Potential) franchise partners have to participate in a five-day training workshop dealing with all aspects of SWM and providing information on how to start a successful recycling business. Needy people receive a start-up loan. In Phitsanulok there are monthly meetings in which Wongpanit and its franchise partners participate (exchanges of ideas for improving processing and setup of processing sites, evolution of prices in the recycling market etc.). Wongpanit is also involved in different types of awareness-raising activities on recycling waste, such as "waste-banks" etc. Students or community members bring their recyclables to the waste bank in exchange for cash at current market prices; on the occasion of "Pha Pa Khaya" people gather together bringing waste, which is then bought by Wongpanit, with the proceeds then donated to monks (Gerold, 2009).



Partnerships between different stakeholders can optimize Solid Waste Management

#### 4.5. Some recommendations for measures to integrate the informal waste sector

There are a lot of recommendations that can be deducted from the experiences described above. We only want to focus on some points that are primarily addressed at decision-makers, but require partnerships with other stakeholders like donors and NGOs, private enterprises etc.:

- Analyse the informal solid waste management activities, its linkages to the formal solid waste management system and its impacts
- If significant informal waste management activities exist, foresee strategic measures for the inclusion of these activities in National Solid Waste Management Strategies, laws and regulations
- Involve representatives of the informal sector in local solid waste management planning processes
- Improve social recognition of waste recovery activities through communication campaigns, partnerships with NGOs and other actors to accompany informal stakeholders
- Facilitate the organisation and formal recognition of informal waste workers (through identity cards, associations, co-operatives, enterprises, etc.)
- Train informal stakeholders on health, environmental, technical and management aspects
- Provide information about recycling markets and prices to informal workers
- Create opportunities for resource recovery through the informal sector
  - » in waste collection systems (e.g. (separate) collection contracts for registered informal sector, buy-back or drop-off points for recyclable materials, partnerships or franchising systems with formal private sector)
  - » on transfer stations or landfill sites (by providing sorting space and infrastructure, establishing agreements with waste pickers on recovery practices not disturbing landfill operation)
- Analyse feasibility of upgrading informal sector recycling and initiating new recycling activities
- Establish partnerships with the private sector to improve the informal sector's linkages to industrial value chains





## 5 Conclusions and Outlook

Various cases have demonstrated that informal workers active in waste management and recycling contribute significantly to resource efficiency and effective waste management. Pilot projects implemented by public authorities, partly supported by GIZ and other organisations, proved that informal stakeholders can become reliable partners in official waste management systems. At the same time, an increasing number of private companies start to recognize the value of using recyclable materials and working with informal actors. The interest of the private sector in cooperating with informal stakeholders shows their importance for establishing an effective system of resource recovery from waste. As UNEP (2011) stated, waste management is one of the sectors relevant to transform the economic system into a green economy. The importance of recycling and the informal sector is underlined by the following statement: “The waste recovery and recycling part of the waste treatment chain probably holds the greatest potential in terms of contributions to a green economy. As natural resources become scarcer and with the prospect of peak oil, the commercial value of materials and energy recovered from waste could be substantial. [...] Greening of the sector will involve formalisation of the informal sector in many developing countries, including the provision of proper training, health protection, and decent level of compensation for waste workers, and thereby contribute to improving equity and poverty alleviation” (UNEP, 2011).

Private organisations in the field of international cooperation, like the Clinton Foundation or the Bill and Melinda Gates Foundation, are already committed to supporting the integration of informal recyclers. Their engagement is primarily based on concerns about poverty reduction and economic development. Nevertheless, their activities do not merely concern the improvement of working and living conditions or the prevention of health hazards, but are directed at making use of the economic potential contained in waste materials for poor populations.

The Commission on Sustainable Development (CSD), which currently works on waste management as one of its priority issues, claimed that moving towards zero waste is an achievable goal, and that a strategic framework for a different partnership between stakeholders including the informal sector is necessary. International organisations as

well as national and local governments should encourage the involvement of informal actors and create incentives for new partnerships. An international partnership for expanding waste management services of local authorities is proposed, as well as a Global Platform on Solid Waste Management initiated by UNEP.

These initiatives should be translated into concrete actions within national and local development programs. Political measures at national and local level could include recycling targets for municipalities or service providers, regulations about contracting organised recyclers, etc.. Inclusion of informal stakeholders in official solid waste management systems requires some kind of organisation and formal recognition, but these can take varying forms (co-operatives, companies franchising systems with registered waste collectors, etc.). Informal workers have to play a key role in determining systems to be established. To make partnerships between the informal sector and formal enterprises successful, further research on recycling value chains is required. The GIZ study on economic aspects of the informal sector in solid waste management constituted a first approach to value the macro-economic and environmental impacts of informal sector activities. This kind of analysis needs to be applied more broadly, and additional research is necessary on the micro-economic impacts of different integration options on recycling companies and their development. Further, practitioners should analyse how to deal with the unstable international markets for secondary raw materials in approaches to integrate the informal sector.

An important challenge for the success of informal workers' organisations is the orientation towards economic sustainability as a co-operative or a company, and common, but efficient management of resources. When co-operatives enter new sorting and processing activities, they sometimes face initial difficulties to arrive at high efficiency rates and large production quantities that can make them an interesting partner for large industries. Business management and medium-term advice can help to improve these shortcomings, as well as partnerships with municipalities. These can pay co-operatives at the same rate they would pay to formal providers of collection or disposal services. Such payments can make the activities of co-operatives sustainable and at the same time contribute to achieving municipal targets for recycling.

The demonstrated effect of informal recycling on GHG emission reduction might also be an additional revenue source for informal recycling activities. New and accessible financing mechanisms should be designed to support the contribution of small-scale recycling to the reduction of GHG emissions.

More and more stakeholders, be it development practitioners, municipalities, NGOs or companies, are realising the potential contribution of integrating the informal sector to a cost-efficient solid waste management and a resource-efficient economy also contributing to poverty reduction. Global partnerships and national and local actions should take into account the existing experiences and develop locally adapted approaches to include the informal stakeholders in order to improve solid waste management systems and resource efficiency and create economic opportunities.

## References

- ACEPESA (2011): Health related issues of informal sector involvement in solid waste management. Study prepared for GIZ's sector project "Promotion of concepts for pro-poor and environmentally friendly closed-loop approaches in solid waste management", Eschborn.
- Arlinghaus, S. (2007): Summary Report on the WEEE do GHK training implementation. Delhi, India, Nov 25th – Dec 10th 2006, Report prepared for GTZ, Köln.
- Arroyo, J. F. Rivas and I. Lardinois (1998): Solid Waste Management in Latin America - the case of small and micro-enterprises and co-operatives. WASTE
- Chaturvedi, B. (2009): Cooling Agents: The Impact on the Informal Recycling Sector on Carbon Emissions. Chintan-Environmental, Delhi, India.
- Chaturvedi, B. (2008): Privatisation of Solid Waste Collection and Transportation in Delhi: The Impact on the Informal Recycling Sector. Paper prepared as partial fulfilment of course on Urban Issues in Developing Countries, School for Advanced International Studies, Johns Hopkins University. Washington DC, December 2006.
- Cointreau, S. (1989): Provision of solid waste services in developing countries, Resource Paper presented at the International Seminar on the Provision of Municipal Public Services in Developing Countries, August 21-29, 1989 Assenovgrad, Bulgaria.
- Cointreau, S. (2006): Occupational and Environmental Health Issues of Solid Waste Management – Special Emphasis on Middle- and Lower Income Countries. Washington DC., USA: The World Bank Group.
- Crivellari, H.M.T, S.M. Dias, and A. de S. Pena (2008): Informação e trabalho: uma leitura sobre os catadores de material reciclável a partir das bases públicas de dados. In: Kemp, V. H & H.M.T Crivellari: Catadores na cena urbana: construção de políticas socioambientais. Belo Horizonte: Autêntica Editora.
- Davies, R. (1979): Informal Sector or Subordinate Mode of Production? A Model. in Ray Bromley and Chris Gerry (eds.) Casual Work and Poverty in Third World Cities. New York: John Wiley & Sons.
- Dias, S.M. (2009): Trajetórias e Memórias dos Fóruns Lixo e Cidadania no Brasil: Experimentos Singulares de Justiça Social e Governança Participativa. 2009. Dias, S.M. (Tese de Doutorado) Faculdade de Filosofia e Ciências Humanas, Universidade Federal de Minas Gerais.
- Dias, S.M and F.C.G. Alves (2008): Integration of the Informal Recycling Sector in Solid Waste Management in Brazil. Study prepared for GIZ's sector project "Promotion of concepts for pro-poor and environmentally friendly closed-loop approaches in solid waste management", available at [www.giz.de](http://www.giz.de).
- Dias, S.M. (2006): Waste & citizenship forum—achievements and limitations. In: Solid Waste, health and the Millenium Development Goals CWG-WASH Workshop Proceedings (available at [www.cwgnet.net](http://www.cwgnet.net)).
- Fernandez, L. (2008): Hacia Una Articulacion Global de Recicladores. In: Raccoglitori di residui, Una panoramica globale sul primo anello del circuito del riciclaggio' Proyecto CWG-Retos al Sur-Reorient. Compiladoras Cecilia Ruberto-Lucia Fernandez. (available at [http://issuu.com/basurita/docs/activ\\_4\\_sensibilisation\\_campaign\\_-\\_c\\_ruberto\\_sub\\_c](http://issuu.com/basurita/docs/activ_4_sensibilisation_campaign_-_c_ruberto_sub_c)).
- Gerdes, P. and E. Gunsilius (2010): The Waste Experts: Enabling Conditions for Informal Sector Integration in Solid Waste Management. Lessons learned from Brazil, Egypt and India. Eschborn, Germany: GTZ.
- Gunsilius, E. and S. Garcia Cortes (2010): Waste and Livelihoods. Support of the informal recycling sector in Iloilo, the Philippines. Eschborn: GTZ.
- Gerold, A. (2009): Integrating the Informal Sector in Solid Waste Management Systems. Basic Aspects and Experiences. Unpublished report for GTZ.
- Gille, Z. (2007): From the Cult of Waste to the Trash Heap of History: The Politics of Waste in Socialist and Postsocialist Hungary. Indiana University Press, Bloomington, Indiana, USA.

- GTZ (2009): Poverty Impact Assessment (PIA) Application in the Elaboration of Waste Management Plans. A Handout for Strengthening the Poverty Reduction Impacts in Waste Management. Unpublished document.
- GTZ (2008): Tackling Climate Change. Eschborn, Germany.
- Hart, J. (1973): Informal Income Opportunities and Urban Employment in Ghana. *Journal of Modern African Studies*, 11.
- IDRC (2009): Diagnóstico de Manejo Integral de Desechos Sólidos de Las Ciudades de Cochabamba, São Paulo, Lima e Montevideo – Fase I, 2009, analysis of overall solid waste management in the cities of Cochabamba, São Paulo, Lima and Montevideo, phase I.
- IDRC (2010): Informe de Investigación Fase II Cochabamba, São Paulo, Lima e Montevideo, 2010, research report, phase II Cochabamba, São Paulo, Lima and Montevideo.
- IDRC (2010): Situación de las mujeres en el manejo de los residuos domésticos – Una mirada a cuatro ciudades, Documento de discusión/ Coordinación Regional, 23.06.2010, situation of women in domestic waste management – a view of four cities, discussion paper/regional coordination, June 23, 2010.
- IFC (International Finance Corporation) (2008): The IFC Recycling Linkages Programme. Presentation given at the CWG Workshop in Cluj-Napoca, Romania, February 20-22, 2008. Available from [www.greenpartners.ro](http://www.greenpartners.ro).
- IFEU (2009): Manual for GHG-SWM Calculator. Tool for Calculating Greenhouse Gases (GHG) in Solid Waste Management (SWM). Germany: KfW, GTZ, BMZ.
- ILO (2010): Child Labour in Waste Picking, ILO.
- Iskandar, L., B. Shaker and R. El-Sherbiny (2010): Economic Aspects of the Informal Sector in Solid Waste Management. City Report for the City of Cairo. Eschborn, Germany: GTZ.
- Jütting, J. and J.R. Laiglesia (2009): Is Informal Normal? Towards More and Better Jobs in Developing Countries. Paris, France: OECD Development Centre.
- Kawakami, T. and T. Khai (2010): WARM: Work Adjustment for Recycling and Managing Waste: action manual for waste collectors and communities to promote their joint actions in improving safety, health and efficiency in waste collection and management. Bangkok, Thailand: ILO Subregional Office for East Asia.
- Medina, M. (2007): *The World's Scavengers: Salvaging for Sustainable Consumption and Production*. Lanham, Maryland: AltaMira Press.
- Medina, M. (2005): *Serving the Unserved: Informal Refuse Collection in Mexico*. *Waste Management & Research*, October, 23.
- Melosi, Martin (1981): *Garbage in the Cities, Refuse, Reform and Environment, 1880-1980*. College Station, Texas (USA); Texas A&M Press.
- Ministry of Environment & Forests and Central Pollution Control Board (2008): *Guidelines for Environmentally Sound Management of E-Waste*, Delhi.
- Ökoinstitut and IFEU (2010): *Klimapotentziale der Abfallwirtschaft. Am Beispiel von Siedlungsabfällen und Altholz*. Germany: UBA, BMU, BDE.
- Payattati, B. (2009): *E-Waste Management. Formalization of Informal E-Waste Recycling unit – Bangalore Case Study*, GTZ-ASEM.
- Pellow, D.N., A. Schnaiberg and A.S. Weinberg (2000): *Putting the Ecological Modernisation Thesis to the Test: The Promises and Performances of Urban Recycling*. In Mol, Sonnenfeld, eds., *Ecological Modernisation Around the World*. London, Frank Cass.
- Programa Competitividad y Medio Ambiente (CYMA) (2008) : *Plan de Residuos Sólidos Costa Rica (PRESOL)*. Plan de Acción, San José, Costa Rica: CYMA.
- Saarikoski, H. (2006): *When frames conflict: policy dialogue on waste*. *Environment and Planning C: Government and Policy*, vol. 24, pp 615-630.

- Samson, M. (Ed.) (2009): *Refusing to be Cast Aside—Waste Pickers Organising Around the World*. Cambridge, MA, USA: WIEGO.
- Scheinberg, A. (2003): *The Proof of the Pudding: Urban Recycling in North America as a Process of Ecological Modernisation*, *Environmental Politics*, vol. 12, No. 4, Winter 2003, pp 49-75.
- Scheinberg, A. and J. Anschütz (2007): *Slim pickin's: Supporting waste pickers in the ecological modernisation of urban waste management systems*. *International Journal of Technology Management and Sustainable Development*, vol. 5, number 3, pp 257-270.
- Scheinberg, A. and A.P.J. Mol (2010): *Multiple modernities; transitional Bulgaria and the ecological modernisation of solid waste management*. *Environment and Planning C* 28, 1, pp. 18-36.
- Scheinberg, A., D.C. Wilson and L. Rodic (2010): *Solid Waste in the World's Cities*. Third Global Report on Water and Sanitation in the World's Cities, 2010. Earthscan Publications, Newcastle-on-Tyne, UK.
- Scheinberg, A., M. Simpson, Y.E. Gupta et al. (2010): *Economic Aspects of the Informal Sector in Solid Waste*. Eschborn, Germany: GTZ.
- Simpson-Hebert, M.L., A. Mitrovic and G. Zajic (2005): *A Paper Life*, UK: WEDC, Loughborough University.
- SNDT Womens' University and Chintan Environmental Research & Action Group (2008): *Recycling livelihoods - Integration of the Informal Recycling Sector in Solid Waste Management in India*, commissioned by GIZ, Eschborn.
- Solid Waste Management Association of the Philippines (2009): *National Framework Plan for the Integration of the Informal Sector*.
- Spies, S., A. L. Florisbela dos Santos and G. Wehenpohl (2005): *Informal sector activities—obstacles and examples for its integration in municipal solid waste management*, Sardinia Landfill Symposium.
- Staffeld, R. (2010): *Report on Value Chain Analysis in the Plastic Recycling Sector in Cairo and Alexandria*, report prepared for Egyptian-German Private Sector Development Programme, GTZ, Cairo.
- SWAPP (2006): *Economic Aspects of Informal Sector Activities in Solid Waste Management*. City Report for Quezon, Philippines. GTZ, WASTE, SKAT.
- UNEP (2011): *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*.
- WIEGO (Women in the Informal Economy Organising and Globalising) (2000): *Women in the Informal Economy*. Cambridge, Massachusetts: WIEGO.
- WIEGO (2010): *Options for Organizing. Waste Pickers in South Africa*, Cambridge/ Manchester.
- Wilson, D.C. (2007): *Development Drivers for Waste Management*. *Waste Management and Research* vol. 25, pp 198-207.
- World Bank: *The concept of the Informal sector*, <http://lnweb90.worldbank.org/eca/eca.nsf/1f3aa35cab9dea4f85256a77004e4ef4/2e4ede543787a0c085256a940073f4e4?OpenDocument>
- Zapata, S. Daniela (2007): *'Transversalizando la perspectiva de género en los Objetivos de Desarrollo del Milenio'* (mainstreaming a gender perspective in the Millennium Development Goals), *Estudios estadísticos y prospectivos*, Economic Commission for Latin America and the Caribbean (CEPAL), <http://www.eclac.org/deype/publicaciones/xml/1/29291/LCL2764e.pdf>
- Zúñiga, J. (2003): *La Informalidad es ya la Principal Fuente de Empleo en la era Fox*. *La Jornada*. Mexico City, December 30.



Deutsche Gesellschaft für  
Internationale Zusammenarbeit (GIZ) GmbH

Dag-Hammarskjöld-Weg 1-5  
D-65760 Eschborn  
Germany  
T +49 6196 79-0  
F +49 6196 79-1115  
E [info@giz.de](mailto:info@giz.de)  
I [www.giz.de](http://www.giz.de)