

## 49. Social aspects of solid waste in the global South

by  
Jutta Gutberlet

*Municipal solid waste is seen either as a nuisance or as a commodity and social dimensions are less important. Waste problems require an integrated, multifaceted, interdisciplinary approach. Informal but organised recycling in Brazil is an example of an innovative, inclusive resource recovery and environmental awareness strategy that has many benefits for the environment and for the waste collectors. Policies need to safeguard the social dimension and the ecological and economic aspects of waste management.*

### Introduction

Definitions of waste range from “all material unwanted by the generator” (Statistics Canada, 2005), to “any substance or object ... which the holder discards or is required to discard” (European Union, 2006: 5), and to waste as a resource recovered through reuse and recycling or as a culturally determined material perception (Pongracz and Pohjola, 2004). According to Gregson and Crang, “waste is seen as historically mutable, geographically contingent, and both expressive of social values and sustaining to them” (2010: 1027). The waste we generate has increased in volume, has a complex material composition and brings associated health risks.

Humans generate more waste than ever because of population growth and as a consequence of increased consumption and discard levels. In particular, discarded plastics are a global problem. Waste is a nuisance when proper treatment or waste prevention strategies are lacking, which results in serious challenges for municipal governments. All waste treatment techniques have some environmental impact, for example by releasing toxins, air pollutants or toxic ash as final residues from incineration, or through contaminated leachate from landfilling (Allsopp, Costner and Johnston, 2001). Although recycling and reuse also create environmental impacts, when energy and water are needed, they spare virgin resources. All other modes of waste management require continuous extraction of new raw materials to maintain the production/consumption cycle.

Waste management following linear techno-economic, end-of-pipe approaches usually falls within the remit of engineering. The social sciences are more often concerned with related environmental policies, environmental education or urban planning, and

with ensuring that the social aspects of waste are visible. For example, Daly (1996), Layard (2005), Victor (2008) and others realised that unlimited economic growth would generate the current environmental and natural resource crisis. According to Schor (2010), humans are already consuming more than the Earth can supply, and generating more waste than it is able to absorb. A one-sided technocratic perspective does not explain the other social aspects of waste, nor does it provide a sustainable solution.

### **Social theory of solid waste management**

It is therefore critical to reduce the amount of waste generated, and to recover all possible re-usable resources from discarded materials. This article focuses on municipal solid waste. This forms only a small part of the problem, since most waste is generated by industrial, agricultural and construction activities. However, waste avoidance and more responsible consumption will tackle these other forms of waste generation indirectly as well.

Not generating waste in the first place, as suggested in *On The Road to Zero Waste* (GAIA, 2012), and focusing on recycling, seem like natural ways forward, and yet they appear to be the most difficult adaptation activities for society to carry out. Reliable information, and creative forms of knowledge mobilisation and environmental education, should require people to voluntarily alter their consumption habits and participate in resource recovery programmes. However, lifestyle changes and waste reduction activities need to be integrated into government strategy and policy.

Importantly, resource recovery creates jobs in waste collection and sorting, and in education and recycling; indeed reuse and recycling create more employment than landfilling and incineration. According to Tangri (2003), recycling 10 000 tonnes of materials per year employs 296 people in the computer sector, 85 in textiles, 18 in paper recycling, 26 in glass recycling and 93 in plastics recycling. Incineration and landfill create only one job per 10 000 tons of material incinerated or landfilled per year.

It is crucial to include different stakeholders from civil society (non-governmental organisations, universities, community groups) and the recycling business itself when designing waste recovery and consumption strategies or policies for a new perception. Examples from the global South reveal the contribution that organised, co-operative recycling has made and how important these stakeholders' participation in waste management programmes and policies is. Inclusive waste management has developed in Brazil as a concept based on principles of solidarity economy and ecological economy (Gutberlet, 2009, 2012). The purpose is to value and empower the workers involved and ultimately reduce, reuse and recycle, thus addressing responsible lifestyles and refusing to waste resources in general (Barr and Gilg, 2006).

### **The benefits of co-operative recycling**

Informal, selective waste collection is common in poorer countries of the South. It is partly done in organised co-operatives or associations, with or without municipal support. Sometimes they add value by creating new products from the materials collected and separated, for example, recycled paper products, washing lines from PET (polyethylene terephthalate) bottles, and roof tiles and furniture from TetraPak packaging (Gutberlet, 2012). In Brazil, approximately 800 000 people are involved in

informal, often co-operative, recycling. Most of these individuals live in poverty and work under hazardous conditions.

Although the activity of selective waste collectors, or *catadores*, in Brazil, is a recognised profession, most of this work is still informal. Not all co-operatives or associations are formalised and not all collectors have access to workers' rights. Regional co-operative networks have emerged that promote collective commercialisation and engage in other collective actions to improve working and remuneration conditions (Singer, 2003).

The resource recovery rate per recycler and per co-operative depends on different factors including the quality of the material separated at the source; the mode of transport; the equipment used at the processing centre where waste is separated, baled and stored; the topography; the distances in the serviced neighbourhood; and the level of training. On average, a recycler carries up to 200 kg of recyclable material a day or approximately 4 tonnes a month (Conceição, 2005). They often work 12-hour days and, on average, push their carts 20 km per day. Informal and organised recyclers recover an estimated 60% of the paper and cardboard that is recycled in Brazil and up to 90% of all materials used in the recycling industry. Conceição (2005) estimates that informal and organised recyclers recover up to 20% of the municipal solid waste generated in urban Brazil, although the official recycling rate in most Brazilian cities remains very low. Only 1.3% of the total 15 000 tons of solid waste generated daily in the megacity of São Paulo is officially collected for recycling (Arini, 2012).

Recyclers who belong to a co-operative or association supported by the local government often experience previously unknown opportunities for development, training and education. These experiences have contributed to building leadership and empowering the recyclers, thereby playing an important role in the restoration of their full citizenship (Tremblay and Gutberlet, 2011). The participants have a say in decision-making processes within their co-op and in stakeholder meetings to negotiate with government and business. Co-op leaders participate in public events, conferences and exhibitions. These practices further empower the recyclers, and open new avenues for social development (Couto, 2012).

Most importantly, co-operative-run selective waste collection schemes generate social capital by providing these individuals with meaningful work. They contribute to improving the neighbourhood, cleaning up waste materials and demonstrating resource recovery behaviour, thus creating opportunities for greater community cohesion. This effect has been widely observed in cities in Brazil and in other countries, for example, Nicaragua (Zapata Campos and Zapata, 2013) and Argentina (Carenzo, 2011; Carenzo and Fernández Alvarez, 2011). Recyclers are often invited to speak at schools, community centres and universities to educate the public about waste and their resource recovery practices.

The new federal solid waste legislation<sup>1</sup> (Política Nacional de Resíduos Sólidos) provides opportunities for municipalities to collaborate with recycling groups (Brazil, 2010). The law requires municipalities to adopt selective waste collection and composting. It supports the involvement of *catadores* in shared responsibility for product lifecycles,<sup>2</sup> and prioritises recycling co-operatives in formal recycling programmes. Nevertheless, the same legislation also allows for waste incineration with energy recovery (waste-to-energy). The law does not set out the waste hierarchy clearly, or give precedence to waste prevention, re-use and recycling over waste-to-energy and disposal, as for example the EU Framework Directive<sup>3</sup> on waste does. A recent proposal to build new incineration plants has generated conflicts in many

Brazilian cities and in other countries in the poor Southern part of the world (GAIA, 2012). The national and local recyclers' movement is aware of the risk of a "vacuum cleaner effect" in favour of waste-to-energy – a danger that has also been outlined by the European Commission. Consequently the movement has called for action to promote selective waste collection and recycling rather than incineration.

Incineration might be an effective way to reduce the volume and weight of waste, but it destroys materials that could generate new products, create employment and save natural resources. Furthermore, waste-to-energy technology is very expensive, it pollutes and produces by-products, is energy inefficient and, above all, does not provide incentives for zero-waste behaviours, because the more waste is incinerated, the higher the cost-benefit ratio.<sup>4</sup>

Despite the increased level of organisation and the international extent of the recyclers' movement, there are many hurdles still to overcome. Probably the biggest challenge is related to the extreme poverty and socio-economic vulnerability of most recyclers, as demonstrated by the *catadores*. Furthermore the lack of political will from most local governments to include the recyclers in their waste management programmes, the threat from corporate waste management, including waste-to-energy schemes, the low prices for recyclable resources and the low remuneration for selective waste collection and organised groups' lack of financial resources, remain as persistent threats to recyclers.

## Conclusion

This article highlights the benefits of engaging recycling co-operatives in resource recovery in the global South. Including *catadores* and their equivalents elsewhere in collecting, separating and transforming recyclable material and in re-educating consumers is an opportunity that can help ensure their livelihoods are sustainable. As environmental stewards they can make ground-breaking contributions by spreading information and using knowledge about waste reduction, resource recovery and the many social benefits of organised, selective waste collection. Incineration is not a viable option, given the environmental, social and economic impacts it has. In countries such as Brazil, household waste is high in organic matter, and thus low in heating value for energy recovery through incineration. Shekdar (2009) also highlights the difficulties of maintaining the necessary operating conditions in Asian countries. Organised and informal selective waste recovery and recycling activities are widespread and need to be expanded to recover most of the recyclable resources from the waste. Increasing awareness of what is recyclable at the household level is also important to enhance waste treatment efficiency. These issues, combined with higher costs relative to other municipal solid waste management options (Dijkgraaf and Vollebergh, 2004) mean that incineration is an unsustainable and inefficient method for household waste treatment.

The benefits from recycling are greenhouse gas reduction and, ultimately, climate change mitigation through the recovery of materials that would otherwise end up in landfills, generating detrimental gases and leachate (Sunil et al., 2004; King and Gutberlet, 2013). As highlighted in the European Commission's Green Paper (2013), plastics recycling and the consequent material savings alone contribute most to preventing climate change impacts, resource depletion and freshwater aquatic ecotoxicity. Reuse and recycling reduce the pressure on natural resources, diminishing environmental damage and contamination in developing countries (Troschinetz and Mihelcic, 2009).

The author suggests a bottom-up approach to achieving sustainable communities where citizens become responsible consumers, concerned with avoiding and reducing waste and providing an appropriate final destination for materials that need discarding. Inclusive resource recovery generates income and addresses poverty mitigation (one of the United Nations Millennium Development Goals). Moreover, inclusive waste management targets a reduction in public spending on conventional waste management practices and generates carbon credits.

Appropriate practices and efficiency in logistics and scale are fundamental to reducing the ecological footprint of resource recovery practices. Organised selective waste collectors such as those in Brazil contribute to these benefits. Capacity building for effective and efficient resource recovery, adaptive policy design, and public awareness building for efficient stakeholder collaboration in source separation are all critical and should be addressed with research. Community engagement, environmental stewardship and social economy can take endless creative and different forms. The organised activity of the *catadores* is important for waste reduction, zero waste and the creation of a more balanced and responsible society.

## Notes

1. Law No. 9 12.305, 2 August 2010.
2. Chapter II, Art. 6, XII.
3. 2008/98/EC.
4. For discussion of the contested nature of waste incineration, see, for example Allsopp, Costner and Johnston (2001), Corvellec, Zapata Campos and Zapata (2012), Gutberlet (2011), Ngoc and Schnitzer (2009), Rocher (2008), Shekdar (2009), Themelis and Millrath (2004) and Weaver (2005).

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**Jutta Gutberlet** is an associate professor of geography at the University of Victoria, Canada, and visiting professor at the University of São Paulo, Brazil. Her research and community outreach over the past fifteen years has focused on integrated waste management in Latin America.



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