



Informal and Cooperative Recycling as a Poverty Eradication Strategy

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Abstract

Selective garbage collection and separation involves many of the urban poor. For them solid waste means resources and recycling becomes a survival strategy. In Brazil, almost a million recyclers perform the service of collecting, separating and commercializing recyclable material. Their work is considered mostly informal and is subject to health risks, accidents and exploitation. Some recyclers are organized in cooperatives, associations or social enterprises. These collective forms of organization provide important spaces for social inclusion and human development, by promoting meaningful work, increasing the workers' self-esteem and improving their living and working conditions. Resource recovery and recycling also generate net carbon credits, which need to be redirected towards this sector. The recent introduction of *waste to energy* technology is perceived as a threat to the recyclers' livelihoods. Incineration does not generate income, produces environmental contamination and competes with other forms of waste management. Action oriented, participatory research with recycling groups in Brazil supports the argument that organized recycling generates social, economic and environmental benefits and radically addresses poverty reduction. Remunerating the recyclers for their service and considering the environmental gains of their work (*Clean Development Mechanism*) tackles the *Millennium Development Goal* of poverty alleviation. Finally, participatory waste management has an important role to play in promoting necessary drastic changes towards a closed looped economies and more sustainable communities on a global scale.

1. Introduction: A Social Perspective on Solid Waste

Finding socially, economically and environmentally adequate, long-term solutions to the serious solid waste predicaments has become an increasing and ubiquitous concern for local governments, environmentalists, academics and the community at large. Solid waste can be a resource and inclusive waste management a strategy to benefit the environment in the transition from disposal to resource recovery and to generate income, thus addressing poverty reduction and contributing to the *Millennium Development Goal* number one. The key objectives in this article are to analyze the social and environmental benefits of such a strategy in the context of the global South and to demonstrate the social impacts of current *waste to energy* technology that are recently presented as 'the' solution in waste management. The research draws on secondary literature and ethnographic case study data from participatory research with organized recyclers, I conducted in six municipalities in the metropolitan region of São Paulo, Brazil, over the past 6 years (see Figure 1). Community-driven, action oriented research implies "systematic inquiry, with the collaboration of those affected by the issue being studied, for purposes of education and taking action or effecting change" (Green et al. 1995 cited in: Cargo and Mercer 2008, p. 327). This kind of epistemology means that the research is very much shaped by those involved. Key stakeholders in the present



Fig. 1. Map of the study area in Brazil.

research were the leaders from 30 organized recycling groups and local government officials who have participated in a community-based research endeavour.¹ This research collaboration with the Faculty of Education at the University of São Paulo has allowed me, since 2005, to get involved in the organization and facilitation of workshops, seminars, meetings, video documentaries and field visits; generating reports, transcripts, films, photos and diary entries besides socio-economic quantitative data. Between 2009 and 2011 part of my research was focused on the organization and social movement of recyclers, encompassing issues such as solidarity economy, empowerment, participation and inclusive solid waste management policies. This involvement with the recyclers and local governments has allowed for capturing the voices of the participants, be it by taping meetings and workshops or by conducting key informant interviews. As a standard procedure the data generated during the research process was reviewed and commented by the participants. Ethical concerns such as informed consent, confidentiality and outlining the possible consequences for the participants were always taken into account.² The strengths of the action-oriented approach – a highly flexible, dynamic and all encompassing framework under which the researcher has to operate – can also become a major difficulty. For being participatory the research process usually takes longer and is sometimes unpredictable, since circumstances and expectations can change and deviate research plans. As Kesby puts it, however, “the politics of fieldwork is not simply to ‘do no harm’, nor does it gauge validity only in scientific terms. Rather, a project’s success can also be measured by the extent to which the process of research

itself develops the skills, knowledge and capacities of participants to use the results themselves” (2000, p. 424).

Political ecology, the theoretical framework applied in my analysis and interpretation, makes important arguments by deconstructing power relations and building an innovative approach towards solid waste reduction and resource recovery. The theory captures “highly politicized environments, where global economic structures, unequal power relations and fractious cultures are embedded in the dynamics of environmental problems associated with solid waste” (Myers 2005, p. 15). The recent debate on *waste to energy* provides a key example for profit oriented versus environmentally and socially sound development. By linking social/environmental justice with political economy, political ecology helps uncover the current global drive towards disseminating profit concentrating technologies in detriment to inclusive, employment generating, selective waste collection and recycling strategies. Political ecology also studies the uneven displacement of risks to human and environmental health as a result of siting waste management facilities, as documented by the environmental justice movement (Baxter 2009; Bullard 1990; Kasperson 2005; Lesbirel and Shaw 2005; Watson and Bulkeley 2005; Young and Hunold 1998). There is also an uneven distribution of risks with the bodies of informal recyclers being disproportionately exposed to toxic material while sorting and classifying recyclable materials and while being exposed to environmental hazards at their homes in marginalized settlements and at work on or nearby landfills (Boadi and Kuitunen 2005; Gutberlet 2008; Gutberlet and Baeder 2008; Parizeau 2006). With today’s challenge of *waste to energy* and with the polemic siting of waste incineration plants the environmental and social justice perspectives have regained importance, particularly in the North–South context.

The terms social and solidarity economy are used interchangeably in the academic literature and embodies an alternative to the hegemonic dominance of the growth oriented economic discourse within public and private spheres. *Solidarity economy*, *économie solidaire* or *economia solidária* is widely perceived as renewal of the economy capturing a great variety of different forms of economic activities (Allard et al. 2008; Laville 1992). This form of economy reinforces institutional asset building through cooperative economy and public, collaborative approaches. Solidarity economy is a bottom-up initiative that encompasses the voluntary sector, cooperatives and associations, as much as, new institutionalized social and ecological economic experiences (Gutberlet 2007). What differentiates the praxis of social economy is a work and business ethics of collaboration and solidarity instead of primarily profit orientation (Allard et al. 2008; Arruda 2008; Singer 2003). The concept is held as an alternative path to the failure of neo-liberal, capitalist dominated globalisation and its inequality outcomes, as discussed in the wider debates around post-capitalist politics (Fournier 2008; Gibson-Graham 2006). Critical scholars like Gibson-Graham describe those community economies that are emerging particularly in the global South from the lens of difference, bringing to light marginalized and often hidden, heterodox economic activities. Ananya Roy highlights the facet of “active frontiers of contemporary capitalism, the greenfield sites where new forms of accumulation are forged and expanded” (Roy 2011, p. 229). While important to underline the risk of commodification of these alternative economies into neoliberal frameworks, there is the potential for community economies to contribute to changing the predominant economic paradigm through the manifold praxis of social economy. In Brazil exciting experiences are happening on the stage of alternative, small-scale social economy initiatives, particularly with the recyclers’ cooperative movement. Here recycling cooperatives, for example, have used microcredit to facilitate collective commercialization (Gutberlet 2009). Rankin critiques the market-oriented foundation of existing models, including the microfinance model, because of the danger to

'roll out neoliberalism' instead of transforming the existing prevailing economic system (Rankin 2008). Despite that realistic risk I will argue in this paper that there is the potential for innovative political and economic rationalities to bring about change and shift towards greater social and environmental justice with those practices.

Social/solidarity economy is also discussed as a strategy to address the weakening social capital of communities (Putnam 2000). With the creation of a federal secretariat and a national council on solidarity economy, in 2003, Brazil has facilitated the creation of new spaces for public policy design and building alternative development approaches within the solidarity economy (Müller-Plantenberg 2008; Singer 2003). Organized recycling conducted through cooperatives, associations, community groups or social enterprises is a form of solidarity economy, yet constrained by the dominant neoliberal economics. These types of workers' organizations generate income, particularly for those who would otherwise be excluded, and provide important social and human development benefits to its members.

The waste management sector traditionally bears opportunities for huge profit concentrations in the context of megacities and large metropolitan regions, particularly in the global South (Sabetai 1999). While cities attempt to improve waste management and sometimes opt for new technologies in waste collection and treatment – an admirable goal – for several reasons, changes to solid waste policies can compromise the livelihoods of organized and informal recyclers. Inclusive waste management translates into opportunities to generate work, to redistribute income and to benefit environmental health (Agnes 2009; Davies 2008; Gutberlet 2008; Myers 2005; Wilson et al. 2006). Current global developments confirm the risk of international corporations taking over solid waste management, at the expense of organized recycling groups, individual informal recyclers and small recycling business (Ahmed and Ali 2004; Davies 2008; Kasseva and Mbuligwe 2005; Mirafab 2004a,b).

In Brazil, similar to other countries of the global South, a significant proportion of the population is already making a living based on material recuperation, through informal and organized cooperative recycling (Besen 2006; Dias and Cidrin 2008; Gutberlet 2008, 2010). The following section introduces current worldwide trends in solid waste management. Considering the labour intensity, recycling seems to be one of the answers to the global and regional rise in unemployment and poverty. Experiences with participatory sustainable waste management are inclusive approaches that tackle social, economic and environmental goals. Organized and informal recycling represents livelihood opportunities, creates work, generates income and benefits the overall environmental quality. The article closes with the proposition to invest in inclusive waste management programs and to develop the necessary supportive public policies.

2. *Solid Waste Management and the Generation of Work and Income*

Waste has been studied widely and from interdisciplinary perspectives; drawing on notions of commodity, resource, nuisance, lifestyle, stigma, disorder, risk, hazard or object of management. Geographers have also contributed in dissecting and analysing the social, economic, political and cultural processes related to solid waste (Barr and Gilg 2006; Bhuiyan 2010; Bulkeley and Askins 2009; Cresswell 1996; Davies 2008; Gregson 2009; Higgs and Langford 2009; Moore 2008; Parizeau et al. 2008, among others). Some of the emerging topics highlight the globally growing consumption levels and waste quantities, the billion dollar industry involved in hazardous waste trade; the transfer of expensive waste management technologies from the North to the South, the increasing generation of E-waste and issues related to waste and social exclusion, to name a few. With rising

flows of commodities, goods and people to almost everywhere, the flows of waste and remainders also have become unlimited. The question what to do with all that waste has become a tangible and pressing one everywhere.

Although landfills are still worldwide the prevailing waste management option, there is a general trend to diminish the dumping at landfills, due to rising operating costs, the NIMBY (*Not in My BackYard*) effect manifested by surrounding communities and environmental concerns in general. In the global South uncontrolled and sanitary landfills are still the prevailing reality. In India almost 90% of the collected household waste is deposited at uncontrolled sites (Talyan et al. 2008). In Turkey too, dumping solid waste on open sites is still the dominant method, followed by sanitary landfills (Agdag 2009; Turan et al. 2009). In the UK, Canada and the US 50% of the household waste gets landfilled under controlled conditions.

With the general push to gradually reduce landfills, incineration and recycling are becoming more prominent as final destinations. Incinerators are common in many countries in Europe and Asia. Holland, for example, has 11 very large incinerators burning approximately 488,000 tons/year; the UK has 19 incinerators with a capacity of 266,000 tons/year. In Sweden 31 incinerators burn 136,000 tons/year, in France 210 incinerators burn 132,000 tons/year and in Italy there are 32 incinerators receiving 91,000 tons/year (Longden et al. 2007; EEA 2009). Japan, South Korea, Taiwan and Singapore are the countries with the largest number of incinerators in Asia (Bai and Sutanto 2002; Gohlke and Martin 2007).

Similar trends are happening in North America. In the US, for example, already 12.6% of the household waste is incinerated (Vyhnak 2008). In Latin America the number of incinerators is still small. During the 1970s and early 1980s municipal governments in São Paulo and Buenos Aires had contemplated the expansion of garbage incineration, however at that time social mobilization and rising costs of this technology prevented its establishment.

Commonly a few multinational corporations are in charge of urban garbage collection and destination in large metropolis in the global South. The trend is to progressively introduce waste incineration technologies as 'clean technology' with the benefit of generating energy (*waste to energy*) (Gohlke and Martin 2007). The re-wrapped incineration technology is now sold under new names like *energetic recycling*, *energy recovery* or *green energy production* and is promoted as easy and immediate solution to the garbage dilemma and the growing demand for new energy sources. The energy generation argument however, has already been undermined with research showing the superiority of recycling in terms of energy efficiency. A study considering the Brazilian context, conducted in 2008 by the Mining and Energy Ministry in Brazil to evaluate waste management strategies for the city of Campo Grande highlights the net energy benefit from recycling compared to incineration (Ministério de Minas e Energia 2008).

The criteria labour intensity is usually not taken into consideration when deciding on the acquisition of new waste management technologies. Yet, particularly in the global South it becomes obvious how work intense resource recovery and recycling is. In addition, the International Labour Organization (ILO) alerts that low income and lack of employment worldwide remain major problems, putting people at risk of poverty and misery (ILO 2010). The number of global unemployed had reached a record with over 212 million people worldwide being officially out of work in 2009, translating into an increase of 34 million people since 2007. Global unemployment was particularly high in 2009 among young people, evidencing the largest increase since 1991, with 13.4% of global youth being unemployment. Furthermore, the report considers more than half of the world's workforce – between 1.48 and 1.59 billion people – as vulnerable workers, in

2009. 633 million workers were living with their families on less than 1.25 US\$/day and 1183 million workers around the world were earning 2 US\$/day, translating into so-called *working poor*. The ILO estimates that between 2008 and 2009, 185 million workers of that category were at risk of falling into poverty (ILO 2010, p. 18–22).

In Latin America the official employment situation is less critical than in most African and Asian countries and unemployment is projected at 8% for 2010, a slight decrease from 2009. In Brazil, one of the strongest economies in the region unemployment fell from 9% in 2004 to 7.7% in 2008 (ILO 2010). Unemployment is higher among women (9.6%), compared to men (5.2%) and among Afro descendents (9.4%) compared to Caucasian descendents (6.2%) (IBGE 2010). According to the independent research institute DIEESE there were a total of 2.8 million economically active people out of work in 2008 in all metropolitan regions in Brazil (DIEESE 2009). The institute also confirms the fact that income of Afro descendents and women were systematically lower than income of men and Caucasian descendents.

Despite Brazil being one of the four BRIC economies (Brazil, Russia, India, China), ranking worldwide as the 6th economic power and having a GDP similar to South Korea, the country still struggles with large social and economic disparities. Since 2002, in particular concerted efforts of the federal government have persistently tackled income redistribution. Although contentious, the national government's overall strategy (*Fome Zero* or Zero Hunger), including conditional cash transfers (*Bolsa familia* or family scholarship) under which approximately 20% of the population receives a monthly living wage of approximately 125 US\$³ – depending on average household income and the number of children at schooling age – has made a difference to many families that were living in poverty (Rocha 2009). Until the economic crisis in 2008, continuous increase in the minimum wage, growing rates in formal employment, and higher pension payments have also played a part in significantly reducing inequality in Brazil. The *Fome Zero* program has helped raise the disposable income of poor families in the country (Jaccoud 2006). However, immense challenges remain to expand the opportunities for unskilled and socially excluded people to make a living through their work.

3. Social Opportunities of Resource Recovery and Recycling

Organized and informal resource recovery from garbage has globally become a significant livelihood activity. The informal economy comprises, "... all forms of 'informal employment' – that is, employment without labour or social protection – both inside and outside informal enterprises, including both self-employment in small unregistered enterprises and wage employment in unprotected jobs" (Chen 2007, p. 2). Individual, autonomous recycling falls under the informal sector and represents one of the most important survival strategies. Informal recycling has a long tradition in human society and is still very prominent in countries in the global South. Here organized groups increasingly perform selective collection, classification and commercialization of recyclables. In countries with large income disparities such as India, Mexico and Brazil approximately 1% of the population makes a living in this sector. Approximately 800,000 to 1 million, mostly informal, recyclers (in Brazil called *catadores* or collectors) work in Brazil and only a small proportion is organized in associations or cooperatives [personal communication from a representative of the national recyclers movement, *Movimento Nacional dos Catadores de Materiais Recicláveis* (MNCR), 26.05.2010].

Most of the recyclers, even the organized ones, work under extreme difficult, risk prone and unhealthy conditions and face numerous challenges. Labour and social

regulations are deficient and, although the profession *catador* in Brazil has recently been recognized, the category suffers from widespread prejudice and stigmatization. The official procedure to create a cooperative in Brazil is expensive, bureaucratic and time-consuming. Only few groups have achieved the formal status of a cooperative, and even a smaller proportion is able to access the official microfinance and funding opportunities, recently introduced by the federal government. There is an urgent need to create specific labour legislation (tackling occupational health and gender issues), which attends the particular demands of recyclers. According to the Brazilian recyclers movement there were 24 highly organized and well equipped, formalized cooperatives in 2006; while 70 cooperatives were well equipped and had an intermediate level of organization; and 80 groups had a low level of organization and performed the activity informally with precarious equipment. In 2006, approximately 157 unorganized groups of *catadores* were working under precarious and health threatening conditions on landfills (MNCR 2006).

Research published by MNCR suggests that the approximate cost for the creation of a new cooperative workplace, depending on the level of organization and equipment varies between approximately 1950 and 3150 US\$ (MNCR 2006). Furthermore, the report recognizes that the most important development gain from expanding work and income opportunities with selective waste collection and separation is the chance to recover the citizenship of the *catadores*, who often are socially excluded. Inclusive solid waste management supports dignified work, as expressed by a cooperative member: "I am a useful citizen and my work is recognized!" (MNCR 2006, p. 145).

A comparison of different waste management options and their labour intensity illustrates the significant contribution of inclusive waste management in generating social and human capital. According to the Institute for Local Self-Reliance, 647 workplaces per 10,000 tons of processed material per year are generated in the USA with reuse and recycling, whereas only 1 workplace is created with incineration (ILSR 2006). "On a per-ton basis, sorting and processing recyclables alone sustains 10 times more jobs than landfilling or incineration" (ILSR 2006, n.p.). Furthermore, "...[s]ome recycling-based paper mills and plastic product manufacturers, for instance, employ on a per-ton basis 60 times more workers than do landfills" (ILSR 2006, n.p.). This information reflects the context of North America, where collection, separation and recycling is not as labour intense as in countries like Brazil, where this number is manifold. For the cost of the projected large-scale *waste to energy* facility (190,000,000 US\$) in the city of São Bernardo do Campo (in the metropolitan area of São Paulo) (Nunes 2010), approximately 60,000–90,000 new workplaces could be generated for *catadores*, based on the calculation proposed by MNCR (2006).

Besides the lower expenditures with labour intense recycling operations, compared to installation and running costs of high tech waste management facilities, there are other benefits from recycling, which need to be accounted for. There is strong evidence that recycling is overall more environmentally beneficial than incineration and landfilling. A study commissioned for the European Commission has shown that: "overall, source segregation of MSW [Municipal Solid Waste] followed by recycling (for paper, metals, textiles and plastics) and composting/AD (for putrescible wastes) gives the lowest net flux of greenhouse gases, compared with other options for the treatment of bulk MSW" (Smith et al. 2001, p. 74).

Research on urban environmental services for solid waste management concludes that in case all recyclable material which today is dumped at landfills would be recycled, the annual potential benefit of recycling would amount to more than 5 billion US\$ for the Brazilian society (IPEA 2010). The data considers the benefits from the production process and the savings from waste management. Current recycling activities in Brazil already

generate an annual gain between 880 million and 2 billion US\$, just by recovering what would otherwise end up in landfills, were it also generates detrimental gases and leachate (IPEA 2010). Estimate values for CO₂ sequestration from recycling considers the specific nature of each material and are calculated for each ton of recycled resource. Reuse and recycling reduces the pressure on virgin materials, diminishing environmental damage and contamination (Sunil et al. 2004). Selective waste collection and separation efforts translate into *carbon credits* and *clean development mechanism*, which additionally remunerates the work of the recyclers.

Recycling means business.

“When collected with skill and care, and upgraded with quality in mind, discarded materials are a local resource that can contribute to local revenue, job creation, business expansion, and the local economic base” (ILSR 2006, n.p.).

Resource recovery can become a social and economic development instrument, offering direct opportunities for communities embedded in waste prevention, reduction, reuse, and recycling. Finally, recycling can also be a tool to create and expand environmental awareness, particularly when the recycler becomes an educator talking to household members, at schools or at public events (Baeder 2009).

Participatory and inclusive approaches to waste management have the potential to recover human dignity and citizenship by engaging with socially and economically excluded members of society. These approaches build environmental stewardship by creating opportunities to perform environmental community education, and they tackle environmental health with appropriate resource recovery. Recyclers can work safer, more efficiently and obtain better value for their work when organized in cooperatives and associations. Through collective commercialization the groups can further increase the value of their work, cutting out the intermediate dealers (Gutberlet 2009). Organized recycling provides the opportunities for education and training (human development) and facilitates the access to information. Coop members have the chance to participate in decision-making processes, in stakeholder meetings, and negotiations with government and business. These practices are empowering, build citizenship and prepare new avenues for social development, yet it challenges the ability for collective organization and action (Tremblay et al. 2010).

Organized recycling generates social capital, by incorporating people into meaningful work. The recyclers' contact with the community presents an opportunity to increase environmental and social awareness because they act as disseminators of information regarding waste reduction, recycling practices and 'zero waste' aims. Nevertheless, better practices and efficiency in logistics and scale of collection, classification and recycling still seem fundamental challenges to reduce the overall ecological footprint of waste management, also with respect to cooperative recycling.

4. *Current Social Threats Through Waste to Energy: A Case Study*

With informal and organized resource recovery and recycling frequently being one of the main income sources of the urban poor (Medina 2001; Nas and Jaffe 2004), the decision for household waste incineration and *waste to energy* technology poses serious threats to individual and collective, small- and medium-scale waste recycling operations, resulting in a disastrous loss of income for the people involved. The incineration lobby, however, argues that selective collection/recycling and incineration go hand in hand and that more

workplaces would be created with incineration. During meetings, seminars and public hearings in the metropolitan region of São Paulo on solid waste management, since 2010 the *catadores* have voiced their doubt whether the budget for solid waste management could be shared between recycling and incineration. With the acquisition of expensive *waste to energy* technology they are concerned that little funds will be left to invest in selective collection, recycling and educational measures. According to Francisca a recycler from São Bernardo do Campo: “They are going to burn our product, our work and our recycling!” Current developments in the municipality of São Bernardo do Campo prove this concern to be realistic. Since 2010 the city is pursuing the implantation of an incineration facility and has since then neglected the two local cooperatives *Refazendo* and *Raio de Luz*. The proposed location for this incinerator is the former landfill *Alvarenga*, which is located at the periphery of São Bernardo do Campo, in a protected watershed, close to low-income settlements. The case poses a typical environmental and social justice concern over the siting of a hazardous facility next to the poor.

The voices of many recyclers reveal the understanding that incineration does not tackle the root cause of waste production, but that it generates air contamination and toxic ashes, while continuing to use up precious natural resources and energy for the production of new goods (personal communication with several representatives from the MNCR during meetings and seminars in 2010). A public manifestation document against incineration, elaborated in May 2011, by the recyclers’ alliance for selective waste collection in the metropolitan region of São Paulo, reiterates:

“CONSIDERING our responsibility with PLANET EARTH and future generations; our concerns with already elevated levels of air contamination ...; our worries about the health of the local population ...; our concern with finding viable solutions to combat unemployment and generate SOCIAL INCLUSION and to fight hunger and poverty; our preoccupation with climate change; and Above all [considering] the fact that resource recovery is a solution to these problems we should start expanding recycling. NO INCINERATION!” (unpublished material).

The proposed facility in São Bernardo do Campo (SBC) is projected to receive 1000 tons of household waste per day and will generate 30 MW/hour of electricity, which according to the municipality would be sufficient to generate the energy for 300,000 people (a little less than half the population in SBC). Given the large size of this plant it is expected to also receive household waste from the neighbouring municipalities. The cost for the incinerator is estimated at 190 million US\$, to be funded as public – private partnership, with a concession to operate for 30 years (Nunes 2010, p. 52). Since the announcement of the city’s incineration plan the local, regional and national recyclers’ movement has started to mobilize and has since become vocal against this proposal. Since 2010 several seminars and public debates were organized by local governments, universities, NGOs and MNCR on the solid waste dilemma in the metropolitan region of São Paulo. The community that supports selective waste collection and recycling has since then engaged in local demonstrations and the distribution of information pamphlets. These formal incidences and informal conversations with the recyclers are indicative that many of the leaders in the metropolitan region of São Paulo and within the national recyclers’ movement (MNCR) are now aware about the possible consequences of a decision away from resource recovery. Recycling builds livelihoods and waste incineration jeopardizes these livelihoods. Given the environmental, economic and social implications involved in the transformation of *waste to energy* a re-conceptualization of waste is proposed, without perpetuating the usual, “linear, techno-economic model of the policy process, divorcing policy making from policy intervention” (Gregson and Crang 2010,

p. 1026), but introducing participatory and sustainable waste management as a new social-cultural paradigm of dealing with waste.

Social movements of organized recyclers are emerging with the potential to become a leading political force against waste incineration and for resource recovery (Gutberlet 2008; Medina 2008). Bottom-up politics of resistance and deliberative democracy are theoretical building blocks to promote the paradigm shift towards the recognition of solid waste as a resource to address unemployment and poverty in the global South and for the recognition of the paradox of unlimited waste generation to address environmental health (Heynen 2009).

5. *Participatory Sustainable Waste Management*

Participatory, sustainable waste management (PSWM) is defined as “solid waste recovery, reuse and recycling practices with organized and empowered recycling co-operatives supported with public policies, embedded in solidarity economy, targeting social equity and environmental sustainability” (Gutberlet 2010, p. 171). The concept combines social with environmental goals, by addressing livelihood concerns such as generating work and income, investing in human development and improving environmental health. PSWM is based on a framework with three pillars: (i) governance and deliberative democracy, addressing the political and social contexts in waste management, (ii) solidarity economy, focusing on the collective objectives and outcomes, proposing a groundbreaking model for economic development, and (iii) participatory management, where different stakeholders participate in decision-making on waste management.

Governance is about steering societies and organizations. A key issue is how decisions are made and to what degree civil society is involved in the decision-making processes. In deliberative democracy the voice and input from community representatives and networks is crucial. Networks comprise a wide variety of actors, including government and non-governmental organizations. True public participation in policy-making is more than just consultation or dissemination of information, but requires transparent democratic processes, accessible fora for deliberation and democratic representation of the stakeholders. When participants are empowered they perceive their stake in the decisions to be made and when people are part of a deliberation process, there is a sense of ownership and thus agreed results have higher potential for validation and acceptability.

Solidarity economy brings social justice issues and values, such as cooperation, redistribution and reciprocity, into the economy (Fisher and Ponniah 2003). “Solidarity economy creates synergies between actors (local authorities, private enterprises, state, citizens) and generates workplaces by offering new services and new forms of production” (Moulaert and Ailenei 2005, p. 2042). This form of economy embodies opportunities to alter consumer behaviours towards ethical consumption. Nevertheless it is important to bear in mind the opportunities (Gibson-Graham 2006) and the persisting limitations to changing the market oriented and capitalist approach to prevailing economies (Rankin 2008).

Participatory management means sharing the responsibilities between government agencies and other stakeholders for the wellbeing of the available resources, for example, to prevent overexploitation and to regulate fair access. The commons, in this case embodied by the recyclers, already make a living from resource recovery and their access to these materials needs to be secured and expanded, recognizing their work as part of formal waste management and ideally becoming the only form of garbage collection (including the integrated collection and transformation of organic solid waste). Integrated, inclusive waste management such as PSWM is a dynamic, multi-stakeholder approach,

based on principles of decentralization, participation, social empowerment, equity and environmental sustainability. It is a process that needs to be continuously re-assessed, just as adaptive co-management of natural resources (Ackerman 2004). Collaboration and cooperation are basic principles of shared resource management. According to Kooiman (2003, p. 97),

Co-governance in its varying appearance may be an answer, a reaction to or an expression of what [the author sees] ... as a major societal development, the tendency towards growing societal interdependence and inter-penetration Co-governance means utilizing organized forms of interactions for governing purposes.

The present participatory action oriented research conducted with recycling cooperatives in the metropolitan region of São Paulo showcases some exciting results in terms of capacity development of this recycling sector. Frequent meetings with the PSWM project steering committee (which involves coop representatives and government agents from the metropolitan region of São Paulo), debates and public seminars held in the region since 2010, as well as field trips to other recycling experiences in Brazil, have contributed to strengthening the recyclers, giving them a resilient voice and ultimately empowering them. Monica a leader of the *catadores* in Diadema explains: “Wherever we pass, we make the difference! Our presence and voice contributes. Here [referring to the PSWM project steering committee] I have learned to speak, to fight for my rights and to help others to conquer their rights”. Many of the activities and actions promoted with recyclers have provided opportunities to bring government, civil society and recyclers together, reducing prejudice and stigma. Ultimately, a movement in support of inclusive, selective waste collection is emerging and growing with the input of these recyclers. Recently the recyclers have created a regional alliance against incineration, which is also part of GAIA the international movement against incineration. Their voices can be heard more frequently at public hearings, in the media, at seminars and public events (see Figure 2).

6. Final Remarks: Important Grounds for Inclusive Policies

The research points towards significant social contributions from selective waste collection and separation with organized recycling cooperatives in terms of meeting the



Fig. 2. Recyclers' manifestation against waste incineration.

Millennium Development Goal of reducing poverty and building more sustainable communities. We have seen that inclusive waste management can be an effective strategy to generate work and employment for the urban poor and thus benefit the local economy. Significant poverty reduction could be obtained if the services provided by the recyclers in terms of resource recovery and carbon crediting would be fully recognized and fairly paid. Organized recycling programs, supported by the government, also provide an opportunity to enhance public environmental awareness, assisting the households in achieving a better waste separation or waste avoidance. The approach suggests stakeholder participation and democratic deliberation. Nevertheless, partnerships between local governments and organized recyclers are often unsuccessful in the long term mainly because of governmental discontinuity. Programs need to continuously be assessed and re-adjusted, as suggested in adaptive co-management. The praxis and the literature reveal severe organizational and political obstacles yet to overcome, but also underline some gains from integrating co-op run selective waste collection into official waste management programs. Capacity development with the recyclers helps reduce occupational risks, by improving work arrangements and using protective measures. The voices of *catadores* can serve as important catalysts generating environmental awareness and decreasing social stigma.

Collective structures in recycling, such as co-ops, associations or social enterprises are not final and definite solutions, but they are important in a process of societal transformation. Despite operating within the wider neoliberal economic system, recycling cooperatives represent an innovative form of social economy. Social inclusion, solidarity and deliberative decision-making are facets of many cooperatives and offer chances for human and social development. The recyclers' organizations represent spaces for emancipation, where the participants are active agents within the wider common project of making a difference in life and building more sustainable communities. The experience on capacity development with recycling groups in the metropolitan region of São Paulo has showcased the potential for inclusive solid waste management, recognizing the social and economic benefits of this approach.

There are also economic opportunities for the *catadores* in the recycling sector, besides awareness building and the collection, classification and redirection of materials. *Coopcent*, an umbrella organization for recycling cooperatives in this region, located in Diadema, for example, transforms PET plastic bottles into washing line, a technology invented by one of the recyclers. This exemplifies the potential for a diverse industry sector to evolve out of resource recovery, generating new jobs. It has been demonstrated that the recyclers could also collect organic household waste for composting and community gardens, producing food in the city (Yates and Gutberlet 2011).

Finally the environmental contribution of resource recovery needs to be noted. There is strong evidence that recycling is overall more environmentally beneficial than incineration and landfilling. A study commissioned for the European Commission has shown that,

overall, source segregation of MSW [Municipal Solid Waste] followed by recycling (for paper, metals, textiles and plastics) and composting/AD (for putrescible wastes) gives the lowest net flux of greenhouse gases, compared with other options for the treatment of bulk MSW (Smith et al. 2001, p. 74).

The commons involved in resource recovery can play a pivotal role in the transition towards less waste and from a system that is based on the premisses of disposal and incineration towards lengthening product life cycles and closing the material loops. There are

no single recipes for inclusive waste management, however some premises contribute towards successful outcomes, including: participation, transparency, political will, fair public policies, continuous capacity building and ongoing environmental education programs. The research described in this paper is based on a process of mutual and active learning. I have been able to acquire knowledge with the recyclers and the research activities have contributed to strengthening the recyclers' voices and to expanding their consciousness about *waste to energy*, which has initiated a social movement in Brazil, in opposition to waste incineration. This initiative is now also part of the global movement in pro of selective waste collection and against incineration. Given the interdisciplinary approach on waste and the links to production and consumption, these movements promise to make important contributions to the paradigm shift for responsible consumption and resource recovery, ultimately benefiting the life on our planet.

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Short Biography

Born in Germany and raised in São Paulo, Brazil, **Jutta Gutberlet** completed her PhD in Geography, in 1990, at the University of Tübingen, in Germany. She is Associate Professor in Human Geography at the University of Victoria (UVic) in Canada. Her research is community-driven, participatory and action oriented, with a focus on sustainable livelihoods, participatory resource management and poverty reduction, primarily in the Latin American context. She teaches in the fields of Social and Development Geography. Her recent book: *Recycling Citizenship, Recovering Resources: Urban poverty reduction in Latin America* published by Ashgate is about the social, economic and environmental potential embedded in solid waste. Jutta Gutberlet is also the director of the Community-based Research Laboratory at UVic (<http://www.cbrl.uvic.ca>) and she is principal investigator in several international research projects.

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² The research has received ethical approval from the University of Victoria, Protocol Number 08-05-129c.

³ Exchange rate of 0.6283 (using the nominal rate) based on the *Daily Currency Converter* of the Bank of Canada, 26th of June 2011 (<http://www.bankofcanada.ca/rates>).

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