

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/339399773>

Inclusive extended producer responsibility scheme for packaging: Building sustainable cities

Conference Paper · February 2020

CITATIONS

0

READS

138

1 author:



[Jacqueline Rutkowski](#)

SUSTENTAR Interdisciplinary Institute for Studies and Research on Sustainability

22 PUBLICATIONS 228 CITATIONS

SEE PROFILE

INCLUSIVE EXTENDED PRODUCER RESPONSIBILITY SCHEME FOR PACKAGING: BUILDING SUSTAINABLE CITIES

Jacqueline Elizabeth Rutkowski

Business School, University of Leeds

Email ID: Jacqueline.rutkowski@gmail.com

Abstract

Recycling can reduce the scarcity of natural resources and the negative environmental impacts of increasing waste production, also contributing to the global effort to mitigate climate change. Innovative and low-cost methods of waste recycling have been developed by vulnerable and marginalized waste pickers who constitute the informal recycling sector (IRS), which is considered as part of waste management systems in Brazil and in other countries. The IRS's working procedures differ from those implemented in EU recycling schemes, defining a social technology (ST) that reduces overall recycling costs and amplifies amounts recovered as well as provides income to a poor and jobless population. This article presents a comparison of the Brazilian ST IRS with the EU recycling model, focusing on Packaging Recycling Systems. The goal is to analyze the differences and similarities of both models and discuss how they can learn from each other to improve the recycling rate in the world towards a Circular Economy.

Keywords: Waste recycling; EPR for packaging; Waste pickers; Waste management; Sustainable cities; Circular Economy.

Introduction

As a result of a linear economic model based on infinite growth, waste has become a global environmental problem of major proportions and consequences related to soil and groundwater pollution, human disease, and one of the main sources of GHG. Reducing waste generation and diverting as much waste as possible from landfill and incineration, increasing reuse and recycling are strategies for organizing sustainable solid waste management (WM) around the world.

In developing countries, where WM is hardly implemented, packaging recycling is being carried out by waste pickers (WP) who have created a “social” technology (ST) for urban waste management and recycling from their practical knowledge for recyclables collection and sorting, which is organized in a Solidarity Economy framework (Rutkowski, Lima and

Oliveira 2013; Lima et al 2011; Rutkowski and Lianza 2004). Several studies have shown that their action increases the amount of waste recovered and reduces the operational costs of waste management, as well as turning waste into income and jobs that result in poverty alleviation for a few million people, contributing to SWM in many countries (Wilson et al., 2006; Medina, 2007; Gutberlet, 2008; Rutkowski and Rutkowski, 2015). Consequently, many international agencies (OECD, 2016; World Bank, 2008; UN-Habitat, 2010) have recommended drawing lessons from current IRS initiatives to guide policy development in waste management. However, the IRS' working procedures differ from those implemented in the EU waste recycling schemes, which is usually considered as a reference in the world.

This article presents the results of research aimed at finding out how these informal operators should be invited to work with, not against, SWM to make cities more sustainable and inclusive. The focus of the research is on extended producer responsibility for packaging (EPR) which has been a policy used in many countries to address this problem (OECD, 2016). The Brazilian experience in EPR packaging, which is being implemented in an inclusive manner, is investigated using the European experience of EPR Packaging, the first and most consolidated experience in the world, as a benchmark. Qualitative and quantitative methods were combined to analyze the models, highlighting similarities, strengths, and weaknesses of each one. The research also discusses how the two models can learn from each other to improve Circular Economy in the world and contribute decisively to solutions to recent concerns and international plastic waste prevention agreements.

Material and methods

The research is based on a comparative case study. The focus is on extended producer responsibility for packaging (P-EPR) because packaging is responsible for 30 to 50% of municipal waste, and EPR has been a policy implemented in many countries to address this problem (Hwang, 2007). The Brazilian experience in EPR packaging (BR P-EPR) is investigated using as a benchmark the European experience of EPR Packaging (EU P-EPR), the first and most consolidated experience in the world.

Qualitative and quantitative research methods are being combined to analyze the models. Initially, a systematic literature review on the EU packaging recycling model was done to register the way that the P-EPR schemes have been organized in European countries as well as their main results achieved. This review encompassed also grey literature because recent reports on the European P-EPR have been published on some professional and institutional

websites in charge of the recent discussion of the new EU Circular Economy Directive that results on amendments on the EU Packaging Directive and others. Reports on several experiences implemented in Brazil to improve waste pickers' work conditions and to contribute to their inclusion on waste management and P-EPR schemes are also analysed to complement primary data collected on different participatory activities that have been run by the researcher and her partners of ORIS- Observatory of Inclusive and Solidarity Recycling (Rutkowski et al 2017) since 2015¹.

“Producers responsibility” AND “packaging”, “Packaging Producer Responsibility” AND “Design for Environment”, “cost” AND “Producer Responsibility” were the key words used in Google Scholars and Portal CAPES² for searching for scientific papers, reports and thesis in the EU EPR. "Informal recycling sector" AND “Packaging, "Waste pickers" AND "Packaging" AND "Producer Responsibility" were the key words used for complementing the knowledge on informal recycling sector and packaging recycling in different countries in the world. The abstracts of 106 entries were analyzed resulting in 38 papers, reports and thesis fully read for complementing the information in both models.

Data was also collected from participant observation on some professional conferences, seminars and lectures organized to discuss how the new EU directives for Circular Economy, waste management and packaging are going to impact the EU P-EPR. Field observation through technical visits to EU recycling facilities was done to a deeper understanding of the packaging recycling processes in Europe from a practical, operational and business' view. To complete the understanding of the recycling model in Europe, study tours to some European countries where the P-EPR is considered well implemented and where the action of the IRS is registered were run. Particularly, data related to how the informal sector operates, how many people are estimated to be involved in the activity, their main achievements and difficulties was gathered by participant observation on visits to some sites where the IRS operates in some countries and by some non-structured interviews with some key informants (Flick, 2004).

Quantitative results related to packaging recycling rates in European countries were get from EUROSTAT website. For the quantitative analysis of BR P-EPR the annual

¹ORIS is “a network built around selective collection and solidarity recycling, as a socio-technical alternative to urban solid waste treatment, consisting of WP representatives, support technicians and NGOs, universities and public institutions” that, since 2012, has been developing several action research projects with the IRS to meet Brazilian WP's technical and scientific demands.

²Portal CAPES is an electronic platform provided by Science and Technology and Education Ministries of Brazilian Government for accessing the main academic papers basis in world.

productivity and other business data from a group of 56 Brazilian Waste Pickers (WP) cooperatives, registered as service providers in the Brazilian P-EPR Agreement, are being analysed. The data of the cooperatives is being accessed from a database formed by the National Association of Brazilian WP (ANCAT)³. This database was organized by ANCAT to compose a measure of the WP's participation in the index of packaging recycling in Brazil. These data have never been used for research purposes and cannot be displayed to third parties but a quantitative anonymized analysis of them is being done.

Results and discussion

EPR is environmental policy, based on “the polluter pays” principle. This aims to increase waste diversion and recycling of targeted materials - in this case, packaging. It should also lead companies to develop activities and innovation in Design for the Environment. This policy is implemented under different economic instruments and operating strategies around the world, but for packaging it can be summarised by producers being responsible for collecting or “tacking back” packaging from waste and treating it for recycling. To support these activities, each producer pays Advanced Disposal Fees for the amount of packaging they place on the market(OECD, 2016; Gupt and Sahay, 2015; Da Cruz, Simões, and Marques, 2014).

In Europe, recyclable waste is collected by local authorities or by private companies hired by them. Recycling services - sorting, classifying, baling - are usually under the responsibility of different private companies. These organisations have the operational costs of these services financially supported, either fully or partially, by packaging producers (Da Cruz et al 2014; Tojo, Lindhqvist and Davis, 2001; Cahill, Grimes, and Wilson, 2011).

In Brazil, packaging producers have supported waste picker cooperatives (WPC) to improve their collection and sorting capacity (Demajorovic et al 2014). Waste pickers are organized into cooperatives and collect household packaging, preparing the different recyclables in their cooperative's sheds for recycling, acting as the link between the waste management services chain and the recycling value chain (Rutkowski & Rutkowski, 2017). In this model, they improve their working conditions; they do not need to work in unhealthy conditions, in dumps or on the streets as before, and can share activities and responsibilities with other waste pickers. Organized into cooperatives, they can market recyclables materials

³ This database is available on <http://recicla.eco.br/Ancat/>.

that they collect and process better than they could as individuals, reducing the transaction costs of their activities. They also feel empowered by being involved in both chains (Rutkowski & Rutkowski, 2015).

The inclusive EPR is running independently of the Local Authorities (LA) (Demajorovic & Massote 2017). In most developing countries there is a lack of responsibility of LA in implementing waste management (Silpa et al, 2018; UN-Habitat, 2010). Therefore, this scheme is providing simpler operation and an easier system for dissemination.

In this model, different types of plastics, paper and metals, regardless of their market value, are being diverted for recycling in the inclusive scheme. In Europe, where the system is market-driven, only the most valuable plastics and papers are recycled due to screening costs and other technological constraints. Thus, in the inclusive model, a wider range of packaging is being effectively recycled due to waste pickers' modus operandi, which is not based just on the value and cost-effectiveness analysis that organizes the selective collection and processing of recyclable materials in Europe. This is very important for the Circular Economy goals and for the recycling system, contributing to the improvement of the local recycling market.

The inclusive scheme has also provided mutual learning and support for both actors: producers can better understand the local recycling market because WP can clearly point out which recyclables cannot be recycled due to market restrictions. This information can help producers on improving their DfE actions⁴. In the other hand, WP have learnt more about, and may be closer to, the recycling industry, avoiding intermediaries. Organised nationally in cooperatives and networks, Brazilian waste pickers are able to sell their labour-power in better conditions than those observed in other countries, transforming their position in the informal recycling sector. These is important to make their ventures and the whole system more sustainable.

In the next step, a quantitative analysis in the database of WPC will be conducted, to further understand the results of the system, considering the economic, social and environmental aspects.

Conclusions

⁴ A step for developing a second life for PS packaging was created in Novo Ciclo Program, after Danone was informed by some BR WP Co-ops that PS packaging couldn't be recycled (DANONE, 2016).

The preliminary results of the research have shown some advantageous aspects on an inclusive packaging EPR scheme. It has been providing the recycling of different materials regardless of their market value in addition to improve livelihood of a vulnerable urban population. Also, a mutual learning and networking between different economic groups is other very interesting innovation in building new approaches to Circular and Green economies.

However, some challenges also need to be addressed by the inclusive system. In the long run, the system cannot continue to ignore LA, which is legally responsible for selective waste collection. They need to be included in the P-EPR scheme, but this must be done by ensuring that WP cooperatives are hired as municipal service providers for the selective collection and continue to be paid by producers for sorting services. As discussed, they should be kept in the system for best results.

Finally, recycling targets do not imply real improvements to the overall waste management system. The inclusive system studied sins for poor governance. There is no effective control of packaging marketed by producers and no action for free-riders. But this is not a problem with the inclusive system itself but is related to the ability of governments to make companies agree to pay the real costs of recycling all packaging and reducing quantities marketed.

However, neither this nor all other aspects described seem to impede the transposition of the model to other countries where the presence of waste pickers is registered, despite the political and institutional issues that may arise.

Acknowledgements

The author acknowledges for the Brazilian National Waste Pickers Association that has been allowed the access to the documents and database from the Brazilian Sectoral Packaging Agreement and for all the colleagues from ORIS – Observatory of Inclusive and Solidarity Recycling whom insights, researches and diverse knowledge were and keep being very important for the understanding of the IRS in Brazil and in all the world.

A special thanks to Dr Gary Dymiski for several economic insights and concepts and for the partnership that allowed the research to be developed at the University of Leeds.

Funding sources

The research has been sponsored by the European Union's Horizon 2020 Research and Innovation Programme under the Marie Skłodowska-Curie grant agreement No [792855].

References

Cahill, R., Grimes, S. M., & Wilson, D. C.(2011) Extended producer responsibility for packaging wastes and WEEE-a comparison of implementation and the role of local authorities across Europe. *Waste Management & Research*, 29(5), 455-479.

Da Cruz, N. F.; Simões, P.; Marques, R. C.(2014) Costs and benefits of packaging waste recycling systems. *Resources, Conservation & Recycling*, April 2014, Vol.85, pp.1-4.2014.

Da Cruz, N. F. ; Ferreira, S.; Cabral, M.; Simões, P.; Marques, R.C.(2014) Packaging waste recycling in Europe: Is the industry paying for it? *Waste Management*, February 2014, Vol.34(2), pp.298-308. 2014.

DANONE ECOSYSTEM. (2016) DANONE ECOSYSTEM: Handbook of Inclusive Economy, Recycling and Packaging Cycles in Action, 2016, www.ecosystem.com

Demajorovic, Jacques ; Massote, Bruno. Sectoral agreement on packaging: Assessment based on extended producer responsibility/ACORDO SETORIAL DE EMBALAGEM: AVALIACAO A LUZ DA RESPONSABILIDADE ESTENDIDA DO PRODUTOR/Acuerto sectorial de envases: Evaluacion a la luz de la responsabilidad extendida del productor. (2017) *RAE*, 2017, Vol.57(5), p.470(13).2017.

Demajorovic, J.; Caires, E.F; Gonçalves, L.N.da S.; Silva, M.J. da C. (2014) Integrando empresas e cooperativas de catadores em fluxos reversos de resíduos sólidos pós-consumo: o caso Vira-Lata (Interconnecting companies and waste picker cooperatives in reverse flows of post-consumer solid waste: the "Vira-Lata" case). *Cad. EBAPE.BR*, v. 12, Edição Especial, artigo 7, Rio de Janeiro, Ago. 2014.2014.

Gupt, Y.; Sahay, S.(2015) Review of extended producer responsibility: A case study approach. *Waste Management & Research*, July 2015, Vol.33(7), pp.595-611.

Gutberlet, J. (2008). Empowering collective recycling initiatives: Video documentation and action research with a recycling co-op in Brazil. *Resources, Conservation & Recycling*, 52, 659–670.

Hwang, B.B., (2007) Unpacking the Packaging Problem: An International Solution for the Environmental Impacts of Packaging Waste. University of Baltimore. June, 2007. https://works.bepress.com/billy_hwang/1/

Medina M. (2007).The world's scavengers: salvaging for sustainable consumption and production. Lanham: AltaMira Press.

OECD - ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (2016), Extended Producer Responsibility: Updated Guidance for Efficient Waste Management, OECD Publishing, Paris, <https://doi.org/10.1787/9789264256385-en>.

Rutkowski, J.E and Rutkowski, E.W. (2017) Recycling in Brasil: Paper and Plastic Supply Chain. Resources 2017, 6, 43; doi:10.3390/resources6030043. 2017.

Rutkowski, E.W.; Rutkowski, J.E; Lima, F.P.A; Oliveira,F.G.; Silva, L.H.; Silva, L.M. (2017) Brazilian Observatory for Inclusive and Solidary Recycling. ATHENS 2017 5th International Conference on Sustainable Solid Waste Management Athens, 21–24 June 2017

Rutkowski, JE & Rutkowski EW (2015) Expanding worldwide urban solid waste recycling: The Brazilian social technology in waste pickers inclusion. Waste Management & Research 33(12)

Rutkowski, J.E; Lima, F.P.A; Oliveira,F.G.(2013). Improvement of urban solid waste management through recycling incentives: a methodology for more sustainable cities. ISWA World Congress 2013, 7th-11th October 2013, Viena, Austria.

Rutkowski J.E. and Lianza, S. (2004) Sustentabilidade de empreendimentos solidários : que papel espera-se da tecnologia ? In: FUNDAÇÃO BANCO DO BRASIL. Tecnologia social: uma estratégia para o desenvolvimento. FBB,Rio de Janeiro/RJ, pp.167–186

Silpa,K.; Yao,L.;Bhada-Tata,P. and Van Woerden, F. (2018) What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. International Bank for Reconstruction and Development / The World Bank, Washington, 2018. <https://openknowledge.worldbank.org/handle/10986/2174>.

Tojo, N;Lindhqvist, T.; Davis, G.A., OECD Seminar on Extended Producer Responsibility, EPR Programme Implementation: Institutional And Structural Factors, OECD, 2001.

UN-Habitat (2010) WATER AND SANITATION IN THE WORLD'S CITIES, Earthscan Publications, London, http://www.waste.nl/sites/waste.nl/files/product/files/swm_in_world_cities_2010.pdf

Wilson, D.C., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. *Habitat International*, 30(4),797-808.

World Bank, NOTE NO. 44 (2008) by Martin Medina, The informal recycling sector in developing countries Organizing waste pickers to enhance their impact, Grid Lines Publishing, www.ppiaf.org/gridlines.