



Recycling in Brasil: Plastics Supply Chain

Emília Wanda Rutkowski.^{1,3*}, Nathalia Silva de Souza Lima¹, Jacqueline Elizabeth Rutkowski^{2,3}

¹FLUXUS, Laboratory on Urban and Socio-Environmental Sustainability Teach Learning, Department of Infrastructure and Environment Studies, School of Civil Engineering, Architecture and Urban Studies, UNICAMP–University of Campinas, Campinas, SP 13 083 872, Brasil;

²SUSTENTAR, Interdisciplinary Institute for Studies and Research on Sustainability, Brumadinho, MG 35460 000, Brasil;

³ORIS – Observatory of Inclusive and Solidarity Recycling, Belo Horizonte 30535 500, Brasil.

Abstract:

Although recycling is considered the core of a circular economy for returning materials to the supply chain, its procedures are poorly understood. Waste recycling is considered a big source of energy saving and a promoter of CO₂ recovery. Besides that, it generates jobs and changes markets worldwide. The Brazilian National Policy on Solid Waste (PNRS in Portuguese) recognizes Waste Pickers as the major social agent in the recycling process responsible for putting Brasil among one of the largest recycling countries in the world. We present an analysis of Brazilian recycling chains of plastics. The research data were obtained from primary and secondary sources related to the recycling supply chain of plastics, through field visits to enterprises of various sizes in the five Brazilian geographic regions during 2013 and 2014, and following the HDPE chain in the Southeast Region in 2020. A nomenclature is defined for the various enterprises that operate in the Brazilian recycling chain and each node of the chain is described. Beyond the sorting node, the

plastics recycling chain tends to disperse in the Brazilian territory, and even in the most industrialized region (Southeast), the material can travel up to 400 kilometers. The main bottleneck observed in these chains is the lack of continuous programs of selective collection with an emphasis on environmental education processes in the 5,570 Brazilian municipalities. When the covid-19 pandemic arrived to Brasil, the decisions were individualized in all levels of government, which aggravated even more this discontinuity in selective collection programs. Many municipalities stopped the selective collection, which induced the generators to stop the waste segregation at source as well. However, selective collection either continued with autonomous Waste Pickers or associations of Waste Pickers. This territorial fragmentation in sorting hindered the circularity of materials to their respective recycling productive chains. Several possibilities not only to promote waste recycling but also to increase the productivity of the sorting process are discussed.



Biography:

Emília is an Associate Professor at University of Campinas [UNICAMP] in São Paulo state, Brasil. She holds a BSc in Biological Sciences – Ecology, MSc in Limnology, University of Stirling and a PhD in Architecture and Urban Studies, University of São Paulo. She established and lead a laboratory of teachlearning on socioenvironmental sustainability and urban morphology, FLUXUS. Her research portfolio spans some aspects of urban sustainability focusing in urban river restoration and zero waste strategies. Emília has published twenty articles in international journals and two books. She had supervised twenty-one MSc dissertations and seven PhD thesis. She is a member of ORIS, a National Observatory of Inclusive and Solidary Recycling, and of Waste&Citizenship Forum, that mediates the integration of waste pickers in the Municipal Waste Management System. She received a Diploma of Social and Environmental Merit “Professor Paulo Nogueira Neto” from Campinas Municipality and Title of Friends of Waste Pickers from National Movement of Waste Pickers.

Publication of speakers:

1. Rutkowski, E. J.; Rutkowski, W. E. Recycling in Brasil: Paper and Plastic Supply Chain. Resources, Aug. 2017.
2. Lima, N. S. S.; Rutkowski, E. W.; Velis, C. A. The Plastics Recycling Chain in Brazil: a Review. Oral Presentation, XXXVI Congreso Interamericano de Ingeniería Sanitaria y Ambiental, October 27-31, 2018, Guayaquil, Ecuador.

[Webinar on Renewable Energy Resources | April 24th, 2020 | London, UK](#)

Citation: Emília; Recycling in Brasil: Plastics Supply Chain; Renewable Energy 2020; April 24th, 2020; London, UK