

Material Flow Analysis (MFA) for sustainable scenarios of plastic waste management in Thailand

Wikanda Khomchu ^a, Jirawadee Pipattanatornkul ^b, Ampira Charoensaenga , Manit Nithitanakul^a, Pomthong Malakula ^c

^{a)}The Petroleum and Petrochemical College, Chulalongkorn University

^{b)} ASEAN Vinyl Council (AVC), Bangkok

^{c)} Research Program - Industrial Waste Management Policies and Practices, Center of Excellence on Hazardous Substance Management, Chulalongkorn University

Disposed plastics is one of the wastes that need proper management due to the fact that untreated plastic wastes can cause several tremendous environmental impacts such as solid wastes and marine pollution as well as human health problems regarding micro-plastic pollution. To date, a number of treatment and disposal technologies have been developed to reduce these impacts, such as separation, recycling, burn in an incinerator, landfilling depending on both physical and chemical properties of the plastic wastes. In line with the circular economy concept, the solution for plastic wastes has gained momentum from many stakeholders. Because only by collecting and treating properly, plastic waste is one of the most used resources that have high potential to be recycling, and in many cases, they can be economically attractive. Among environmental management tools, Material Flow Analysis (MFA) is one of the systematic tools for waste management regarding quantifying flows and stocks of materials or substances (e.g., wastes) in a well-defined system. This study, the plastic wastes and from post-consumer products and their disposal methods were collected as from primary data sources, such as waste generators; plastic converters, industries, waste processor, and waste treatment facilities. The MFA model was developed to understand the end-of-life of plastic waste flow as well as applied as a tool for estimating the quantity of waste being generated. In addition, MFA was used for supporting the choice of the best end of life scenarios for plastic waste management. The possible improvement will be suggested to support plastic waste management measures for sustainable development goals.

Ampira.c@chula.ac.th

Author Biography: Dr. Ampira Charoensaeng, is a lecturer at the Petroleum and Petrochemical College, Chulalongkorn University. She received her Ph.D. in Environmental Management from the Chulalongkorn University. Her research topics are material flow analysis for waste management, life cycle analysis and carbon footprint of products and another area of interest are surfactant for industrial and environmental applications.

Name: Ampira Charoensaeng

University/Institute: The Petroleum and Petrochemical College, Chulalongkorn University

Research Interest: Life cycle analysis (LCA), Material Flow Analysis (MFA), Waste management,

