

Plastic waste management and flow analysis in South Korea

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Abstract

The enactment of the Framework Act on Resources Circulation on January 1, 2018 has put Korea on the road to transition to a circular economy in full fledged, especially in the industrial sectors. In conjunction, active research is being conducted to establish policies and institutions which will allow Korea to respond to rising global agendas such as the circular economy of plastics. Korea's consumption of plastics has been growing steadily over the years; the country's per capita plastics consumption is 132.7 kg/year, which places Korea as one of the top plastic consuming countries. Accordingly, the amount of plastic waste generated in Korea has also been increasing. In 2017, the amount of plastic waste reached 7.9 million tons/year, a 30% increase from 2012. In response, the Korean government has set its target to reduce plastic waste by 50% and to increase the recycling and reuse of waste plastics by 70% by 2030. Toward this end, various measures have been implemented which consider the environmental impacts and recyclability of products from the production stage; however, it is becoming clear that the shortened consumption cycle of plastic products and the difficulties in maintaining treatment facilities due to the NYMBY phenomenon necessitates continuous efforts to reflect the changing social conditions and prepare appropriate countermeasures.

In view of this need, this study conducts a material flow analysis of plastics in Korea. The results of this analysis showed that Korea's total domestic production of major thermoplastics (resin) at the raw material and product stage was 11,683,000 tons in 2016, of which the production of PE (HDPE, LDPE, LLDPE) accounted for 4,152,000 tons (about 36%). Korea's plastics exports were dominantly larger than its plastic imports, with the exports of major plastics (resin) recording approx. 6,745,000 tons and that of imports, 464,000 tons. In meeting the domestic demand for plastic products, the supply of packing materials and plastic film took up the most substantial portion, amounting to about 2,470,000 tons (43%). At the collection and disposal stage, the amount of plastic waste disposed as EPR, volume-rate garbage, and industrial waste was estimated to be 6,300,000 tons, of which about 3,712,000 tons (59%) were recycled and about 195,000 (3%) tons were exported. The suggested measures for enhancing the sustainable management of plastics include reducing harmful substances used in the production stage, as well as improving the environmental sustainability of industries by supporting R&D projects for eco-friendly material development, establishing company coaching systems, and promoting the market for recycled waste.

Keywords: *Circular economy, Plastic waste management, Material flow analysis, Plastics production*

References

- [1] [1] Hwang, Y. W., Estimation of distribution of plastics in Korea using a material flow analysis, Symposium on waste plastic management issues and improvement plans (2018)

Biography

Sora Yi has completed her Ph.D. from the University of Tokyo and postdoctoral studies from the Asian Natural Environmental Science Center. She has 17 years of experiences in the academic field. She is currently the director of Division for Living Environment, Korea environment Institute. She has published more than 38 papers in reputed journals and has been serving as an editorial board member of reputed.