



Dissemination of Material Flow Analysis (MFA) Study on Polystyrene (2023) in Indonesia

Jakarta, 17 June 2025
Hotel Ascott Sudirman, Jakarta

This agenda aimed to share the findings of PS Material Flow Analysis (MFA) study conducted as a follow-up to a site visit to the PS recycling facility at PT Aneka Indah Plastik in September 2024.

The study was carried out to map the supply chain flow, identify opportunities and challenges in post-consumer PS recycling within the context of a circular economy, and serve as a baseline for developing policy recommendations for the government.

We gratefully acknowledge the support from ADUPI member:

PT Kemasan Ciptatama Sempurna
PT Trinseo Materials Indonesia
PT Kofuku Plastic Indonesia
PT Yakult Indonesia Persada
PT Trimitra Kemasindo Lestari
PT Gosyen Pacific Suksesmaktur
PT Taraguna Foamindo



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The event was enriched by the presence of:

- Ministry of Environment, Republic of Indonesia
- Ministry of Industry, Republic of Indonesia
- Ministry of Internal Affairs, Republic of Indonesia
- Ministry of National Development Planning (BAPPENAS), Republic of Indonesia
- National Agency of Drug and Food Control (BPOM), Republic of Indonesia
- National Research and Innovation Agency (BRIN), Republic of Indonesia
- Center for Sustainability and Waste Management University of Indonesia
- Association of City Governments throughout Indonesia (APEKSI)
- Industrial players and recyclers of polystyrene in Indonesia



Key Findings on PS



Functionality and Recyclability of PS

- **Safe for Health:** Styrene migration in PS products is below BPOM limit (<60 ppm).
- **Insulation:** Strong insulation (withstands up to -40°C) helps preserve food quality in packaging and fridges.
- **Mechanical Strength:** Higher density (1.04 g/cm^3) than other plastics, with good chemical resistance.
- **Cost-effective:** More affordable than alternative materials with similar performance
- **Recyclable:** PS can be recycled into several products such as photo frames, clothes hangers, and household items.



PS Waste Stream

- **Production Share: Only 7% of total plastic production.**
- **3R Performance:**
 - Collection rate: 72.3%
 - Waste managed (3R): 35.5%
 - *Reuse & refurbish: 19.1%
 - *Recycle: 16.4%
- **Waste Contribution:**
 - 1.8% of plastic waste
 - 0.35% of total waste (151.7 KT)



Commitment of PS Industries

The polystyrene industry has expressed their commitment to collaborate with recycling ecosystem (collectors & recyclers), develop PS recycling systems, educate the public on proper PS waste management and voluntary EPR implementation under ADUPI.



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“Polystyrene is widely used across many industries—from everyday products like probiotic drinks to packaging commonly used by small and medium enterprises. It is a material we encounter in daily life”

Polystyrene makes a significant contribution to industry and serves as a driver of economic activity in Indonesia. She highlighted that further analysis of polystyrene could support the development of end-to-end waste management strategies to maximize its circular potential.



Christine Halim
Chairwoman of ADUPI

“Polystyrene plays a valuable role, particularly in protective applications, such as safeguarding larger products during transportation and handling.”

The Ministry emphasized the need for regulations that support better polystyrene management through proper sorting and recycling. KLH is currently working to elevate Regulation No. 75/2019. This study offers timely insights to guide sustainable policy decisions.



Agus Rusly
Director of Waste Reduction and
Circular Economy Development,
Ministry of Environment



Tri Ligayanti welcomed the study and emphasized the importance of strengthening the Life Cycle Assessment (LCA) section, especially as literature suggests that styrofoam may have lower emissions than paper cups. They also requested more clarity on the methodology for calculating recycling rates.

“Please reinforce the LCA findings with comparative data and explain the calculation method behind the recycling rate.”

Tri Ligayanti

Director of Downstream Chemical
Industry and Pharmaceuticals,
Ministry of Industry





Nugroho Adi Sasongko appreciated the study and recommended that the study separately analyze each type of PS, clearly outline the MFA assumptions and methodology, and specify appropriate technologies (mechanical, chemical, or thermal). They also stressed the importance of including informal sector participation in the recycling chain.

“Each type of PS has different characteristics and must be analyzed with tailored assumptions and technology recommendations”

Nugroho Adi Sasongko

Head of Research Center for Industrial System and Sustainability Manufacture, National Research and Innovation Agency

Desi Rasta Waty requested clarification on the CAS numbers for different PS sub-materials to support regulatory updates. She also called for verification of post-consumer PS data and detailed explanation of incineration impacts, including air emissions and residues.

“Clear CAS numbers and safe material standards are crucial, especially if PS is to be reused in food-grade applications”



Desi Rasta Waty

Head of The Processed Food Quality Control Policy Team, National Agency of Drug and Food Control



Gensly Bachtiar highlighted that recycling quality largely depends on proper sorting and called for enhanced multi-stakeholder collaboration (pentahelix approach). He also emphasized the need for region-specific fiscal mapping for the 3% waste management budget allocation.

“Waste policy must reflect regional realities. We can’t apply one-size-fits-all when fiscal and collection capacities vary”

Gensly Bachtiar

Policy Analyst, Ministry of Internal Affairs



Putri Ghassani suggested re-evaluating the planned phase-out of PS in the national circular economy roadmap. She emphasized the need for further studies to incorporate PS management into the 2030 roadmap and ensure that the data reflect regional realities. Clear indicators and measurable policy targets were also recommended.

“A follow-up study is needed to integrate polystyrene (PS) management into the circular economy roadmap.”

Putri Ghassani

Directorate of Environment,
Ministry of National Development
Planning

APEKSI expressed openness to future collaboration and noted that the 3% regional funding allocation should be further reviewed based on local capacities. They also saw potential to connect this work with investment platforms like public-private partnerships.

“This initiative opens doors for deeper regional collaboration, investment strategies, and sustainable waste solutions.”



Tri Utari
APEKSI



This study is a great starting point to map out the Material Flow Analysis (MFA) of Polystyrene (PS) in Indonesia.

This study provides a strong foundation to develop targeted roadmaps for each type of polystyrene, based on usage volume, recyclability, and downstream applications. Ensuring the success of this system requires understanding local contexts and applying a pentahelix collaboration model involving government, industry, communities, academia, and the media.



Prof. Mochamad Chalid
Director CSWM UI



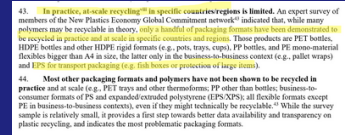


Chresten Heide-Anderson (Nordic EPS Alliance) highlighted that Expanded Polystyrene (EPS), composed of 98% air and 2% PS, is fully recyclable. In several countries, EPS has been successfully recycled "in practice and at scale", with Norway achieving over 90% recycling rates for transport packaging. He emphasized the importance of stream separation and drop-off collection systems, noting that EPS holds significant market value if collected properly.

"Policymakers should not focus on banning materials, but on optimizing their value and infrastructure to support recycling—EPS works when systems work"

Chresten Heide Anderson

Director of Nordic EPS Alliance



Adri Spangenberg (African Polystyrene Industry Alliance) shared South Africa's experience, where the adoption of EPR over the past three years has significantly improved collection and recycling rates, now reaching 30%. She underscored the importance of source separation, reverse logistics, and infrastructure support like cages and trailers. Adri emphasized that the PS recycling system in South Africa is now entirely based on local materials, which has contributed to job creation and economic growth.



"Our EPR programs have created jobs, strengthened infrastructure, and proven that PS recycling is possible—even in a developing context"

Adri Spangenberg

Director of African Polystyrene Industry Alliance



Rayhan Dio said as a manufacturer of electronic products such as refrigerators, air conditioners, and televisions, Panasonic emphasized that polystyrene is a critical material in the electronics sector. It is widely used due to its rigidity, light weight, thermal resistance, and ease of molding. These properties make PS difficult to replace without significantly increasing production costs. Apart from being a material for electronic goods, polystyrene also plays an important role as packaging for electronic goods.

"Polystyrene plays a strategic role in the electronics industry—it's lightweight, strong, and essential for structural components like refrigerator and TV casings. Instead of banning it, we should focus on improving its post-consumer recycling and collection system"



Rayhan Dio

Design Engineer

PT Panasonic Manufacturing Indonesia

Desy Aryantini showcased PT YIP product take-back system for primary, secondary, and tertiary packaging, implemented through its Yakult Lady network. A pilot project in Sukoharjo, in collaboration with local waste banks, is underway to increase collection rates. The company offers bottle return incentives, and its internal collection system currently covers Sumatra, Java, and Bali.

"We're closing the loop—from production to collection—through grassroots efforts. The incentive system works, and we're scaling it"



Desy Aryantini

Public Relation
PT Yakult Indonesia Persada





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Please wait!

The full report will be published soon, as we are currently integrating feedback from the event to ensure the final version is comprehensive and actionable.

This is a step forward toward better data and a more circular future for polystyrene in Indonesia.

Thank You!

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The study is conducted by:



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