

The use of waste in cement kilns in Southeast Asia: Regulatory barriers and policy recommendations

In Southeast Asia, co-processing has significant potential to support both sustainable waste management and industrial decarbonisation, but persistent regulatory and structural barriers continue to slow its expansion. The region's waste streams remain highly fragmented, reflecting diverse national waste systems and uneven levels of waste segregation, collection, and treatment capacity. This fragmentation complicates the supply of consistent, compliant feedstock for cement kilns and limits the reliability of long-term co-processing operations. At the same time, countries face a complex mix of environmental and industrial rules that make permitting processes slow and uncertain, particularly for alternative fuels and waste-derived materials. These regulatory inconsistencies often deter investment and hinder regional scaling of co-processing technologies.

Closing these regulatory gaps will be critical for enabling co-processing deployment across Southeast Asia's growing urban and industrial centres. With clearer, more harmonised rules, co-processing could play an important role in helping ASEAN countries reduce landfill dependence, cut fossil-fuel use in cement industry, and advance regional climate goals.

Challenge 1: Low landfilling tipping fees

Low landfill tipping fees have created a structural imbalance in the waste management system by making disposal the cheapest and most accessible option. In addition, the availability of large landfill capacities and illegal dumps in Southeast Asia does not stimulate utilisation of more advanced waste treatment methods. In many cases the cement industry cannot pay significant premiums for pre-processed waste. Where these two factors combine, waste which could have been potentially energetically valorised ends up being landfilled.

Low landfilling tipping fees also discourage waste segregation, recycling, refuse-derived fuel production, and investment in alternative waste treatment technologies. As a result, waste is simply dumped in landfills without treatment, leading to more methane

emissions, use of land, and risks to groundwater. At the same time, valuable opportunities to recover resources or use waste as an energy source for industry are missed.

For example, Thailand does not implement a landfill tax or increased disposal fees for recoverable municipal and industrial waste. This insufficient economic incentive substantially restricts the adoption of co-processing, even in cases where it is technically viable, as waste generators are not financially motivated to redirect waste away from landfills.

Recommendations:

- Establish minimum national landfill tipping fees to prevent under-pricing and unfair competition with recovery and treatment facilities.
- Consider tiered fees based on diversion potential and environmental impact.

Challenge 2: Insufficient supply of suitable waste streams

Co-processing in Southeast Asia faces significant structural challenges due to fragmented waste collection systems and the absence of centralised municipal solid waste management frameworks. Many waste pickers work informally, making feedstock supply inconsistent, hard to trace, and difficult to scale up. There are not enough Material Recovery Facilities (MRFs), so sorting and pre-processing of waste is limited. Refuse-derived fuel (RDF) often contains unwanted materials like glass and metal, and has high moisture content, which lowers its energy value and makes it less reliable to use. These problems reduce the technical efficiency, economic viability, and broader potential for co-processing as a sustainable way to manage waste and reduce carbon emissions.

Extended Producer Responsibility (EPR) and its Role in Waste Management

Introduction of EPR in the Philippines

In 2022, the Extended Producer Responsibility (EPR) Act was enacted in the Philippines, setting an ambitious target for obliged enterprises to achieve a 20% reduction in their plastic footprint by the end of 2023. The legislation requires large companies to assume responsibility for the entire lifecycle of their plastic packaging, with particular emphasis on the post-consumer or end-of-life phase. This policy has been positively received by industry stakeholders in the Philippines, as it provides a tangible incentive for improved waste management practices and paves the way for a more reliable supply of suitable waste streams for co-processing.

EPR schemes offer producers and Producer Responsibility Organisations (PROs) a substantial motivation to invest in essential infrastructure for waste segregation, sorting, and pre-processing. This includes the development and operation of Material Recovery Facilities (MRFs), which play a critical role in enhancing the quality and consistency of recovered materials.

Through EPR schemes, private-sector funding can be unlocked to support the collection and treatment of waste. Fees levied on producers can be channelled into financing pre-treatment facilities, logistics systems, and quality control mechanisms. These investments are instrumental in strengthening the financial viability and reliability of co-processing supply chains.

Recommendations:

- Incentivise collection, sorting and pre-treatment of waste at the municipal level to ensure quality and consistency of waste streams.
- Introduce and extend Extended Producer Responsibility (EPR) as a mechanism to strengthen waste management systems.
- Implement a mandate to redirect waste to a cement plant situated within an appropriate distance from the landfill.

Challenge 3: Waste Market Competition

Co-processing competes with incineration and other waste management methods for available waste streams. Uncertainty in supply chains, irregular availability, and inconsistent quality of waste fuels may discourage sustained investment in co-processing within cement plants.

In countries where waste management systems are well established and incineration is a predominant method, waste that could serve as a resource for the cement industry is frequently redirected to alternative thermal treatment options. This situation is often exacerbated by further market distortions, such as subsidies and preferential energy tariffs for the utilisation of waste biomass in heat and power generation. The absence of comparable incentives for co-processing leads to the diversion of waste streams from material recovery processes towards power generation instead.

Recommendations:

- Provide fiscal incentives to level the playing field with other waste treatment and energy options.

Challenge 4: Permitting

The cement industry is required to secure co-processing permits when intending to utilise waste streams as a source of energy. However, the permitting procedure can often be subject to extensive bureaucracy.

When permits are slow or unpredictable, cement plants cannot reliably plan for the intake of alternative fuels or waste-derived materials.

Recommendations:

- Streamline permit issuance and decrease the wait-time for permits.

Challenge 5: Co-processing recognition as a sustainable method

Waste policy frameworks often fail to adequately classify co-processing as a legitimate end-of-waste treatment. Instead, they separate energy recovery and material recycling into distinct categories, overlooking the fact that co-processing in the cement sector achieves both simultaneously. This policy gap results in missed opportunities to optimise resource efficiency, reduce fossil fuel dependence, and lower environmental impacts.

Recommendations:

- Recognise co-processing as a sustainable waste management method- simultaneous energy recovery and material recycling - in waste policy frameworks. Urge for a revised waste hierarchy that places co-processing alongside energy recovery and recycling as legitimate end-of-waste treatment.