

# Waste incineration and burning waste in cement kilns

## Issues and concerns

Waste incineration includes all types of technologies that convert waste into hazardous ash, waste water, and air emissions through thermal processes. Often, waste is processed into alternative fuels –such as refuse-derived fuels (RDF)– which are then burnt with coal or oil in multi-fuel boilers or cement kilns. In addition to incinerators with energy recovery (often marketed as “waste-to-energy” incinerators), other thermal conversion technologies – such as [gasification and pyrolysis](#)– are best described as [two-stage incinerators](#). They heat waste materials to high temperatures, creating gas, solid and liquid residues which release hazardous pollutants when combusted.

Waste incineration is the most inefficient and expensive way to generate energy and manage waste. It is the most emissions-intensive form of power generation, [emitting 1.7 times as much greenhouse gases \(GHGs\) per unit of electricity produced compared to coal-fired power plants](#). The cost of energy generation is nearly [four times higher than solar power and onshore wind energy, twice as much as natural gas, and 25 percent more expensive than coal-fired power plants](#). Despite the carbon-intensive nature of waste incineration, the cement industry –[one of the top GHG emitters globally](#)– aims to use alternative fuels to cover [22 percent](#) of global cement kiln energy usage by 2030. Alarmingly, both waste incineration and co-incineration in cement kilns were included as a climate solution in [39 of 99 recently submitted Nationally Determined Contributions \(NDCs\)](#).

Recently, the European Union has [excluded waste incineration from its Sustainable Finance Taxonomy and its financial support](#). In the United States, [only one incinerator has been built since 1997](#). However, waste incineration projects are still rising in developing countries –especially in Asia, where [Japan promotes waste incinerators](#) through international development projects. Multilateral development banks such as the [Asian Development Bank](#) and [Asian Infrastructure Investment Bank](#) have also financed incineration projects in Asia.

[The Stockholm Convention](#) and [Bamako Convention](#) mandate ultimate elimination of unintended Persistent Organic Pollutants (uPOPs) produced from waste incineration and co-incineration, both of which are listed among the top sources of uPOPs formation. Similarly [the Minamata Convention](#) has acknowledged that waste incineration and cement clinkers are major sources of mercury emissions. [The strong tendency of uPOPs formation](#) is also present in pyrolysis, gasification, waste co-incineration in cement kilns, and plasma arc units. Waste incineration exacerbates microplastic problems as well, as [up to 102,000 microplastic particles are found per tonne of waste incinerated](#). Incineration bottom ash also contains [significant total concentrations of elements](#) that are classified as ‘High Level of Concern’ according to [the EU Regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals \(REACH\)](#).

Waste incineration facilities tend to be [disproportionately located in marginalized communities](#), burdening residents with high toxicity, accidents, and noise. Unsafe work environments, land grabbing, displacement and resettlement, and corruption in decision-making processes are other socio-economic issues that are associated with the placement of waste incinerators in communities.

## Recommendations

The global plastics treaty must:

- **Follow the waste hierarchy by prioritizing plastic source reduction and then recycling over disposal;**
- **Adopt policies, definitions, and financial standards that ban all forms of thermal treatment of plastic, whether through open burning, incineration, pyrolysis, gasification, cement kilns, or plastic-to-fuel technologies.**
- **Mandate national governments and financial institutions to exclude incineration from financial support** (i.e. technical assistance, subsidies, tax credits or other financial support).

## Pitfalls to avoid

- Weak, unclear or inconsistent definitions and different understandings of the following concepts among various financial institutions, national governments, and other stakeholders often justify waste incineration:
  - Circular economy;
  - Renewable energy credits; and
  - Plastic and carbon offsets.
- Investing in incineration projects as part of official development assistance, in the form of loans, bonds, grants, technical assistance, and other financing mechanisms.

## Further reading

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- "Community Action Defeats Waste Burning in Cement Kilns." 2017. Global Alliance for Incinerator Alternatives (blog). April 24, 2017. <https://www.no-burn.org/community-action-defeats-waste-burning-in-cement-kilns>