



Why co-incineration of waste is not taxonomy-compliant and should be excluded

Advisory statement

November 2020 – Mariel Vilella, Zero Waste Europe

In the accompanying Annex to the delegated act of the EU Taxonomy, **Zero Waste Europe has observed that the Commission deleted the recommendation from the Technical Working Group (TEG) to exclude burning Refuse-Derived Fuel (RDF) in cement plants.** The report from TEG concluded that “co-incineration of RDF has significant impacts on health and environment due to the polluting nature of the associated emissions and may undermine waste minimisation efforts”, thus undermining the purpose of the Taxonomy Regulation as explained below. **Co-incineration of RDF therefore must be excluded from the Taxonomy.**

What is co-incineration of RDF?

Co-incineration is the burning of waste — generally in the form of Refuse-Derived Fuel (although not exclusively), alongside other fossil fuels — in cement kilns or other non-traditional incinerators.

Traditionally, coal or petcoke is used in these kilns, but in the past decades, many “alternative fuels” have been used. Today, almost all large cement and building material producers use waste as a fuel, substituting more than 70% of their heat needs (see Table 1). In fact, **the cement industry worldwide is seeking to increase the use of alternative fuels in the production of cement** to decrease energy dependence on conventional fossil fuels and appear to be mitigating their GHG emissions. CEMBUREAU, the European Cement Association, has expressed strong interest in expanding the use of waste from cement kilns to generate fuel, to the point of generating targets that aim to use 60% ‘alternative fuels’ containing 30% biomass in 2030, and 90% alternative fuels with 50% biomass by 2050.¹

Waste type used as alternative fuel	Holcim	Cemex	Heidelberg	Italcementi	Lafarge
Waste oil	5		3.7	8.5	22.1
Solvent and liquid waste	11		4.7	21.9	
Tires	10	16	11.6	14.9	19.7
Impregnated sawdust	6				
Plastic	9		26.4	4.7	33.1
Industrial and household waste (solid)		65		13.8	
Industrial waste and other fossil-based fuel	30				
Meat and bone meal	2	4	6.1	15.7	
Agricultural waste	9	10	4.2	11.1	
Wood chip and other biomass	15	5	24.5		25.1
Sewage sludge	2		4.1	1.7	
Other alternative fuel			14.6		

Table 1. Breakdown of percentage of substitution of heat needs and type of waste as fuel by the largest international cement companies/groups. Source: Increasing the use of alternative fuels at cement plants: International best practice, IFC, 2017

¹ lowcarboneyconomy.cembureau.eu/carbon-neutrality/our-2050-roadmap-the-5c-approach-clinker

However, a closer look at so-called alternative fuels e.g. RDF shows that, in fact, these fuels are not green or sustainable. The typical composition of RDF made from mixed waste contains: 31% plastic, 30% unknown, 13% paper, 14% textiles, and 12% wood.² In this sense, **the term “alternative fuel” has often been used to disguise the fact that this “fuel” is actually of fossil origin**, made of waste tires, plastics, and petrochemical waste (waste paint, etc). The fact that a large portion of these fuels are in fact plastic, shows how the cement industry is still using fossil fuels to cover the heat needs of co-incineration.

In particular, plastic waste as fuel is an attractive option to cement kilns because it costs less (or sometimes involves no cost) than traditional fuels. In other instances, waste kiln operators can be paid to incinerate waste (including plastic waste) by other industries. Cement manufacturer Holcim has a global program called Geocycle, which acquires residual plastics from other industries to use them as fuels.³ In certain countries, and certainly within the EU Emissions Trading Scheme, industry has been able to claim carbon credits from burning waste because it purportedly reduces the use of fossil fuels.⁴

Despite cement kilns burning waste just as incinerators do, the concerned European legislation (Directive 2010/75/EU, Annex VI part 4) allows higher values for total dust and NO_x emissions for cement kilns. Although it has been pointed out that dust emissions might be effectively higher when fuels made from waste are used.⁵ Moreover, there are also concerns about the use of RDF as fuel and how it can increase the emissions of heavy metals.⁶

Why should it be excluded from the Taxonomy?

1. Burning RDF in cement kilns makes climate change worse

The direct emissions of burning of 1 tonne of waste are in a range of 260–780kg CO₂ t⁻¹ waste.⁷ The calorific value of waste is highest for plastic, which is mainly fossil based, therefore, **cement manufacturing will still be using fossil based fuels**. With this knowledge, RDF cannot be considered as a low-carbon fuel. It would be environmentally irresponsible to channel and label this process as a green investment for manufacturing cement as it uses fuels that are already largely outperformed even by conventional fossil fuel sources such as gas (340gCO₂eq kWh).

2. Environmental impacts from co-incineration are severe

Like standard waste incinerators, co-incineration is known for the release of harmful pollutants into the surrounding environment, and locks in a “built to be burned” economy that relies upon dangerous fossil fuel extraction to needlessly expend virgin materials and resources.

Co-incineration of waste has significant impacts on health and environment due to the higher emissions ceiling for cement plants in comparison to dedicated waste incineration plants.⁸ Research shows that the emission of pollutants such as heavy metals, dioxins, PCB will increase with higher shares of waste in fuel.⁹

² Currie, J. (2011), The valorisation of SRF in cement kilns, Workshop and site visit: Production and utilisation options for Solid Recovered Fuels, IEA Bioenergy Task 32 and 36, Dublin, 20–21 October 2011, quoted in “La puerta de atrás de la incineración de residuos”. Greenpeace, 2012.

³ www.holcim.ph/holcim-help-tackle-philippine-plastic-pollution-challenge

⁴ www3.cec.org/islandora/en/item/2290-taking-stock-2003-north-american-pollutant-releases-and-transfers-en.pdf

⁵ zerowasteurope.eu/library/air-pollution-from-waste-disposal-not-for-public-breath

⁶ Genon, G., & Brizio, E. (2008). Perspectives and limits for cement kilns as a destination for RDF. *Waste management*, 28(11), 2375–2385.

⁷ www.researchgate.net/publication/26875721_Determination_of_reliable_CO2_emission_factors_for_waste-to-energy_plants

⁸ www.researchgate.net/publication/Air_Pollution_from_Waste_Disposal_Not_for_Public_Breath

⁹ www.sciencedirect.com/science/article/pii

Moreover, studies on co-incineration in cement plants show the environmental impacts of this practice and the lack of an appropriate monitoring systems and regulatory framework:

- The case of **Salonit Anhovo**¹⁰ shows how harmful emissions from burning waste are affecting an already heavily impacted community in Slovenia. By releasing harmful and hazardous substances in the air, the plant is polluting the area and putting citizen's health at stake.
- The case of the **Lafarge Trbovlje**¹¹ cement plant highlights a number of controversial issues in the area of waste incineration and co-incineration. As hazardous emissions threatened citizens' health in the area, civil society groups experienced restrictions to access environmental information and participate in the decision making process. The local environmental group Eko Krog led a successful legal battle that prompted the closure of the plant to fulfil national and EU environmental criteria.
- In the cement plant of **Calusco d'Adda**¹² (Italy) the partial switch from petroleum coke to waste-based fuels has substantially increased the emissions of many pollutants, which can have significant effects on human health. Local citizens have voiced their concerns about the issue, and requested an epidemiological study on the area near the cement plant in order to assess the impact of hazardous emissions on public health.

3. Legislation on co-incineration is outdated and inadequate

Zero Waste Europe has produced an analysis of the legislation concerning air pollution from waste incineration and co-incineration, where it shows that emission values for air pollution in the EU are not aligned with the targets from the World Health Organisation.¹³ Moreover in the case of co-incineration in cement kilns, the higher emission values for some air pollutants show that the legislation is insufficient to protect human health and the environment.

In practice, the case studies presented above show that **the regulatory framework for the management and control of pollution from co-incineration is not always effective and appropriately implemented**. To continue such an unsafe activity, strict monitoring and review by competent authorities is essential and will require management by professional, well informed and technically competent regulatory authorities - which is not the reality in many countries.

Given the accidents and case studies presented above, it is clear that **insufficient resources and attention is being allocated to the implementation of regulations on the co-incineration of waste, and in no case it should be branded as a sustainable activity by the EU Taxonomy**.

4. Co-incineration harms the circular economy, waste prevention, reuse and recycling

The inclusion of co-incineration as a green activity within the Taxonomy Regulation will create a perverse incentive to subvert the Waste Hierarchy and undermine the circular economy in two main ways:

- In the short-term, co-incineration creates a vacuum cleaner effect: waste that could be recycled ends up being incinerated. By creating an economic or greenwashing incentive to burn RDF, EU member states may be less motivated to implement the Circular Economy Package, which aims at ambitious targets for separate collection and recycling that would reduce the production of RDF. In the best case, it will certainly contradict and hinder that ambition.

¹⁰ www.ekokrog.org/wp-content/uploads/2019/07/Salonit-Anhovo-Case-FNL.pdf

¹¹ zerowasteurope.eu/wp-content/uploads/2019/11/zero_waste_europe_cs_burning_waste_in_cement_kilns_lafarge_trbovlje_en.pdf

¹² zerowasteurope.eu/wp-content/uploads/2019/11/zero_waste_europe_cs_calusco_dadda.pdf

¹³ zerowasteurope.eu/library/air-pollution-from-waste-disposal-not-for-public-breath

- In the long-term, co-incineration creates a lock-in effect: prevention of progressive policies on waste management. Similarly to the lock-in effect created by waste incinerators, the strong economic and reputational interests from the cement industry will become barriers to improve waste reduction, separate collection and recycling.

Conclusion

It is crucial to preserve the legitimacy of the Taxonomy Regulation and exclude the burning of RDF in cement plants for the following reasons:

- Co-incineration contributes to climate change. Cement plants burn plastic and tyres, made of fossil fuels that emit significant amounts of CO₂ when incinerated.
- Cement plants burn waste that could have otherwise been either recycled or composted. Municipalities committed to a zero waste circular economy show that up to 80-90% waste can be separated at source and reused/recycled.
- Co-incineration is not a safe way to treat toxic waste. Monitoring and reporting of burning RDF are insufficient, evidence from reported accidents show significant impacts on public health and the environment.
- Co-incineration also negatively impacts local communities. Local populations are often bearing the cost without any consultation or compensation.

For all the reasons explained above, Zero Waste Europe urges the European Commission to exclude co-incineration of RDF from the list of eligible activities for sustainable finance under the Taxonomy Regulation.

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Zero Waste Europe is the European network of communities, local leaders, experts, and change agents working towards the elimination of waste in our society. We advocate for sustainable systems and the redesign of our relationship with resources, to accelerate a just transition towards zero waste for the benefit of people and planet.



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