Waste incineration under the EU-ETS

Assessment of climate and employment effects

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CE Delft

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- Know-how on economics, technology and policy issues
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Background and goal

- The European Commission is considering to include incinerators in the EU ETS by 2028.
- If incineration is included waste prevention and recycling may become more competitive than incineration.
- Zero Waste Europe and Reloop have therefore requested CE Delft to determine:
  - the climate effects
  - the employment effects

  of inclusion of incineration under EU ETS in 2030 and 2040.
- Update of the study of 2021.

Approach

- Waste incineration under EU-ETS may lead to CO_2 reduction by more:
  - source separation and recycling of waste (households, companies);
  - residual mixed waste sorting and recycling;
  - waste prevention;
  - Carbon Capture Storage at incinerators;
  - reduction within other sectors when waste companies buy carbon credits.

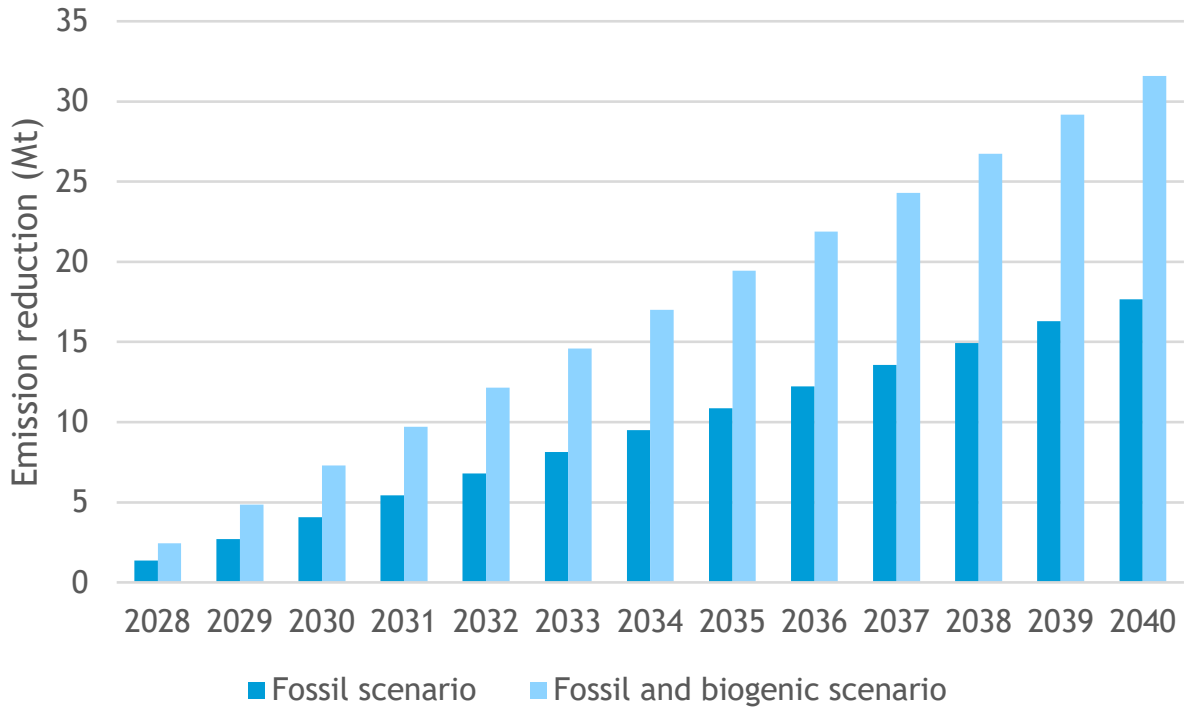
- Two approaches to study the effects:
  1. **Calculation emission reduction and employment effects**

     based on estimated increase of waste sorting and recycling activities.
  2. **Calculation of emission reduction**

     within EU-ETS based on the annual reduction of the EU-ETS Cap (4.4% per year).

Climate effects within EU-ETS sector

- Including emissions of waste incineration increases EU-ETS Cap by 31 (fossil emissions) to 55 Mtonnes (fossil and biogenic emissions).
  - Annual reduction of EU-ETS cap is 4.4% per year.
- Inclusion of waste incineration leads to extra EU-ETS emission reduction:
  - From 4 to 7 Mtonnes in 2030.
  - From 18 to 32 Mtonnes in 2040.



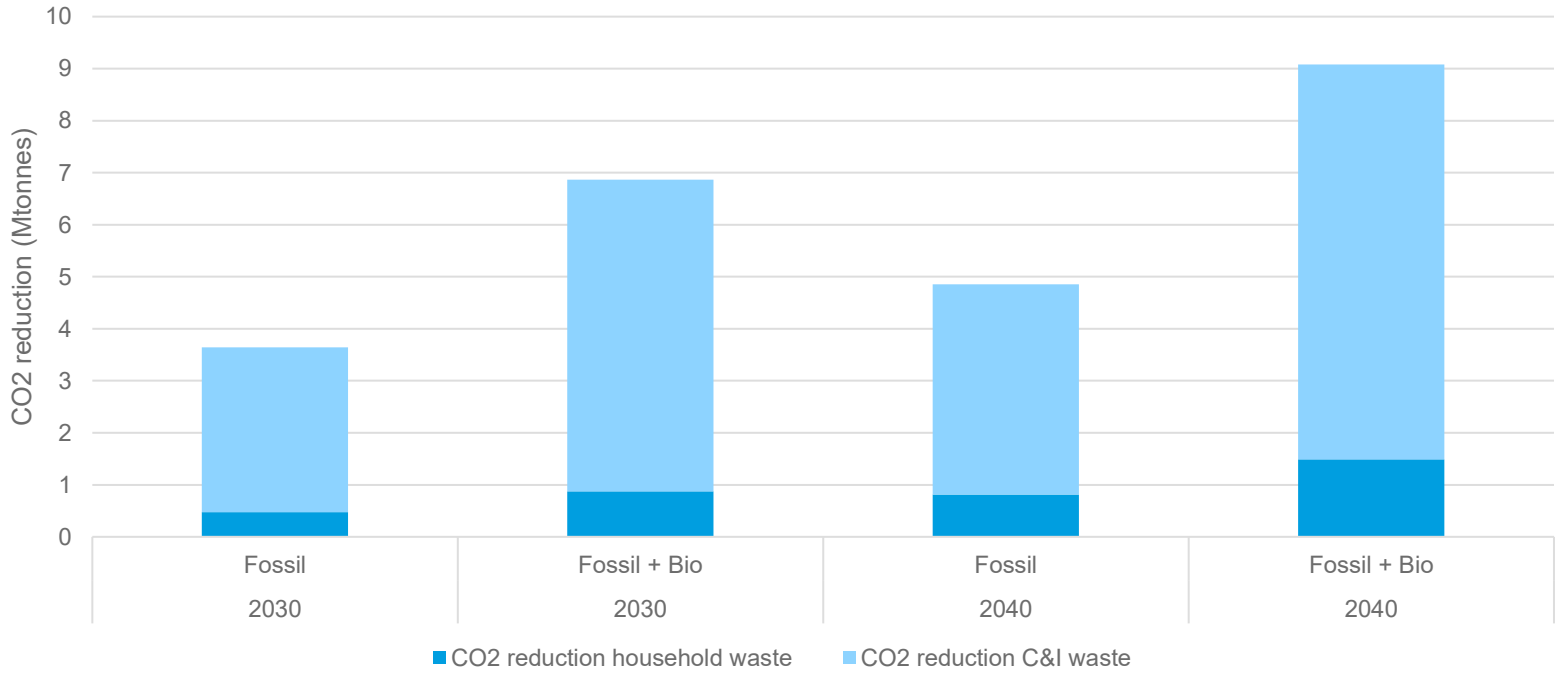
! Reduction outside EU-ETS is not incorporated in these figures. (e.g less import of virgin plastics from China and USA)

Effects on recycling and waste prevention

- Increase of incineration costs will make sorting, recycling and waste prevention more competitive.
- Incentive for more source separation, residual mixed waste sorting and CCS.
- According to the literature, 1% price increase of incineration → 0.2% more sorted household waste.
- For company waste, 1% price increase of incineration → 0.4% extra sorted company waste.
- Depending on waste composition and future EU-ETS prices:
  - Unsorted waste household reduces by 0.3% to 10%.
  - Company waste reduces by 15% to 41%.
  - Residual mixed waste sorting is not included in this calculation.

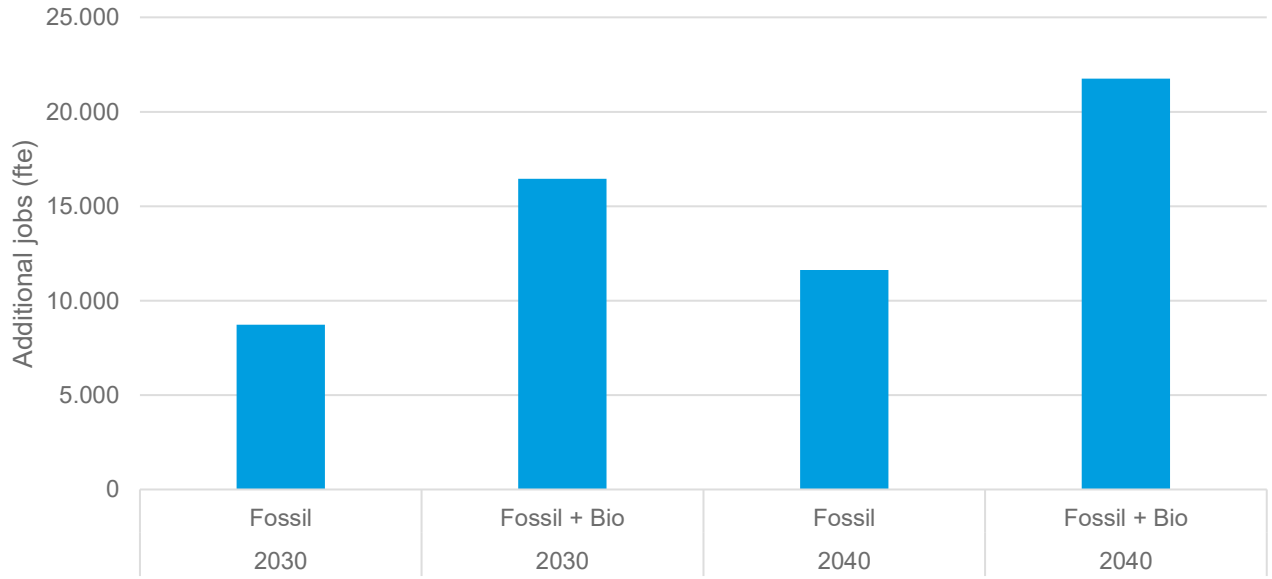
Emission reduction source seperation

- Emission reduction over the total life cycle of products and materials:
  - From 3.6 to 9.1 Mtonnes by more source separation.



The effects on employment

- Recycling is a factor 10 more labour intensive than incineration.
- Extra recycling activities lead to 8,700 extra jobs in the fossil scenario in 2030 and over 21,000 fte in the fossil and bio scenario in 2040.
- Figures exclude waste prevention.
  - If more waste is prevented (f.e through repair activities), the employment impact may be significantly greater.



Conclusions

- Climate impacts of waste incineration under the EU-ETS
  are at least 4 to 7 Mtonnes in 2030 and 18 to 32 Mtonnes in 2040.
- These figures are a minimum, as emission reduction outside EU-ETS are not included.
- Waste incineration under EU-ETS may lead to 8,700 to over 21,000 additionial jobs.
- Cost increases for households, companies and industries can be mitigated by recycling incomes of CO_2 emission credits from the government to households, businesses and companies.

! The study focused on climate impacts and employment, but also broader environmental benefits over the life cycle of products and materials (improved air quality, less bottom ashes, etc.) were taken into account.

More information?

- Contact information
  - Geert Warringa: warringa@ce.nl
- Sources/more information
  - https://cedelft.eu/publications/waste-incineration-under-the-eu-ets-assessment-of-climate-benefits-update-2025/