

INTERNATIONAL TECHNICAL  
CONFERENCE  
"SOLID RECOVERED FUELS (SRF) - A  
SUSTAINABLE OPTION FOR SPAIN"  
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The role of SRF for the  
Italian strategy in  
Energy from Waste

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COVIS

- In December 2009 the Member States of the European Union agreed on the climate change package aiming at ensuring that the EU will achieve its climate targets by 2020 reducing the greenhouse gas emissions of 1990 by 20% (= 780 million tons of CO<sub>2</sub> eq.).
- Considering the extremely long delay by Italy in achieving the targets set by Kyoto, there is an urgent need to detect other industrial sectors which could contribute to reducing greenhouse gas emissions.

*“Post-consumer waste is a small contributor to global GHG emissions (<5%), but the waste sector can positively contribute to GHG mitigation at low cost and promote sustainable development (high agreement, much evidence)”*

IPCC, 2007: Summary for Policymakers. In: Climate Change 2007

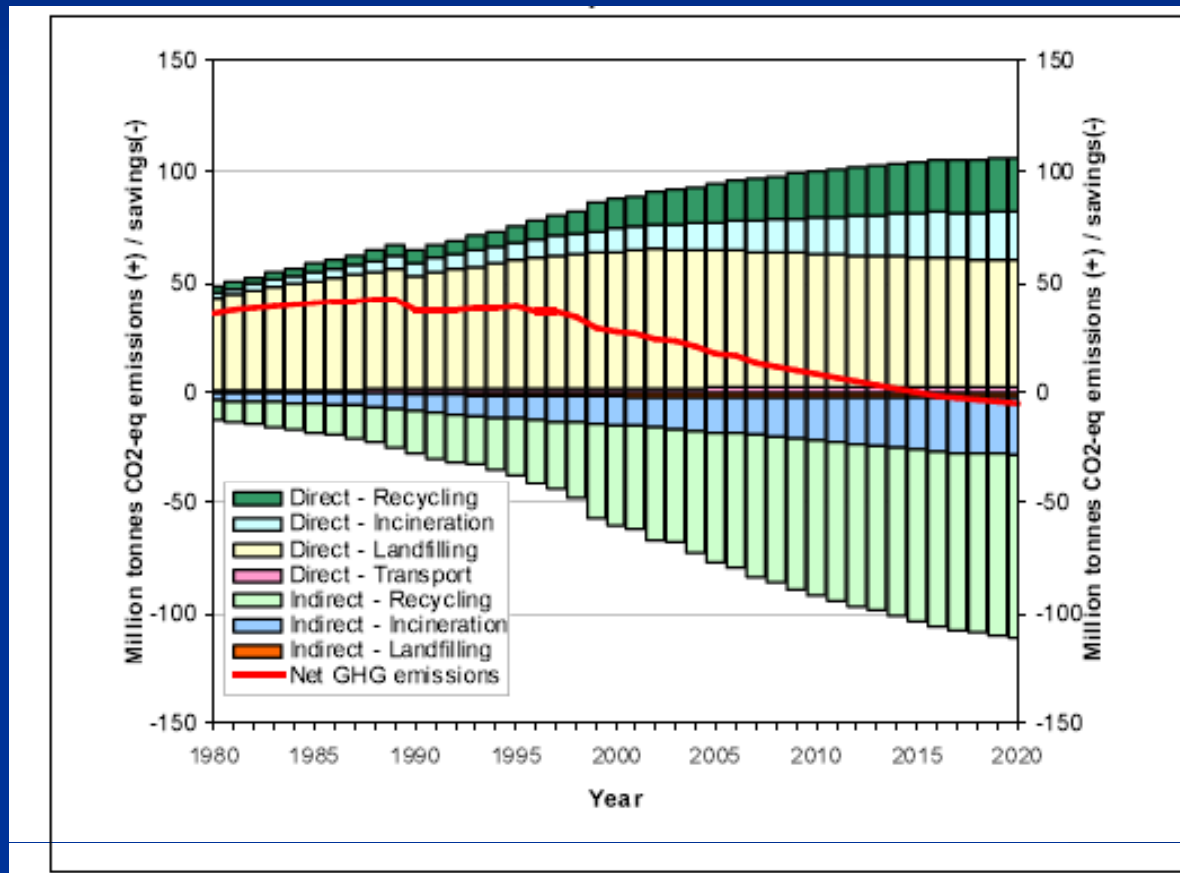
Several national and international studies acknowledge that the waste sector can significantly contribute towards the reduction of greenhouse gas emissions by:

1. Reducing disposal in landfills;
2. Recycling and recovering (including energy recovery) waste thereby substituting primary source by secondary raw materials

- Joint Research Center (JRC) estimates emissions from municipal wastes are up to 1.4 tonnes of CO<sub>2</sub>-eq per tonne of waste in some regions, and can be up to 7% of their overall GHG emissions.
- Through optimised management strategies, most of the organic waste that contributes to GHG emissions can be diverted from landfills reducing these emissions to almost zero.
- If this organic fraction of the waste is used to replace fossil fuels, and if waste recycling is considered as an option to avoid the extraction and processing of raw materials, the reduction of GHG emissions by such waste management strategies can be up to 20% of the overall GHG emissions in some regions

[http://ec.europa.eu/dgs/jrc/downloads/jrc\\_climate\\_change\\_policy\\_making.pdf](http://ec.europa.eu/dgs/jrc/downloads/jrc_climate_change_policy_making.pdf)

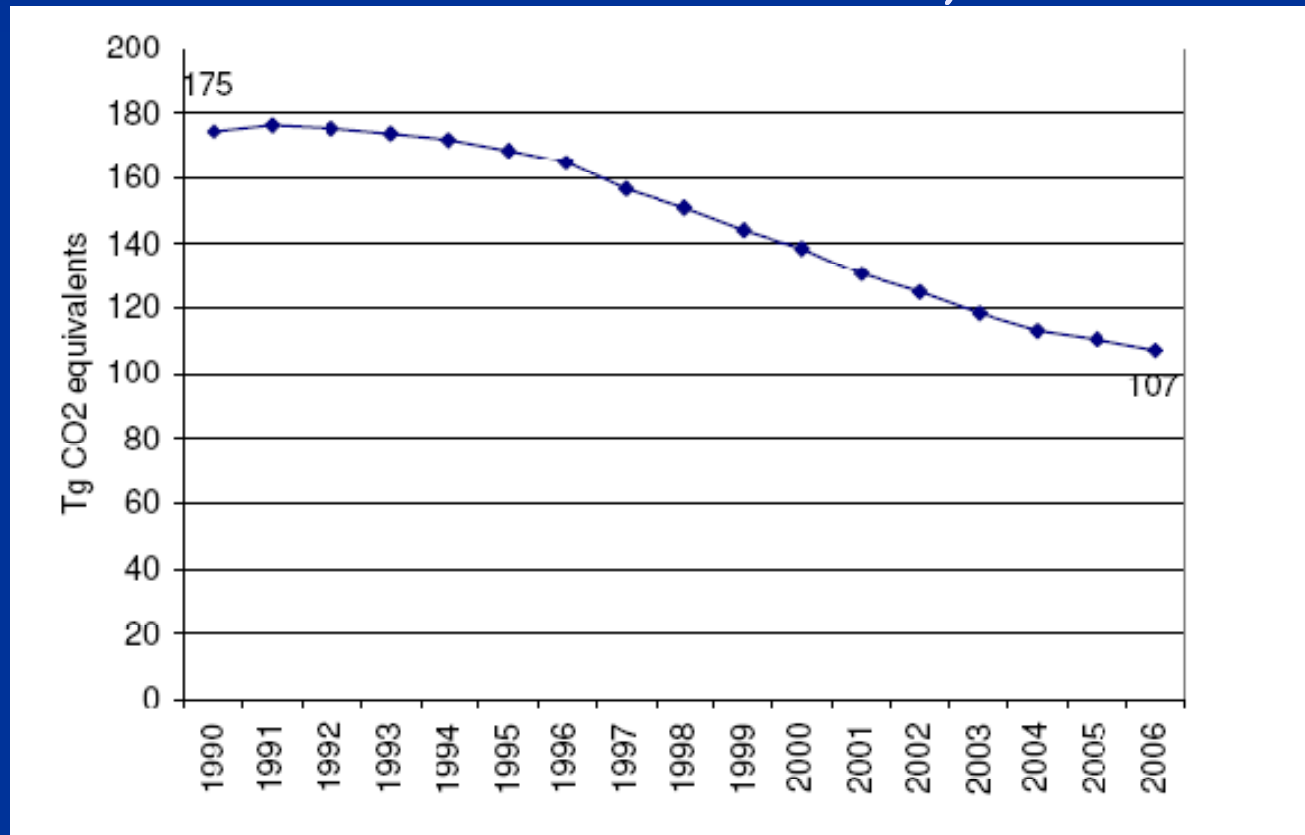
The relevant news is not only the relative intensity of the positive GHG emission from waste sector but also the fact that within UE-15 has expected to become a negative emitter



*ETC/RWM (Working Paper 1/2007 - Environmental outlooks: municipal waste)*

This potential seems to be confirmed by the  
**EEA Report No 5/2008:**

*"Greenhouse gas emissions from the waste management sector fell by 39 % between 1990 and 2006.  
Greenhouse gas emissions from this sector are projected to decrease further to approximately 44 % below 1990 levels by 2010"*



*EEA: Annual European Community greenhouse gas inventory 1990-2006 and inventory report 2008*

In Italy, on the basis of the data collected by *European Environmental Agency* waste sector contributes up to 3,3% on GHG emission that means 17 Mt CO<sub>2</sub> eq on Base-year emissions.

Existing waste management practices can provide effective mitigation of greenhouse gas emissions from this sector.

A wide range of mature, environmentally effective technologies are commercially available to mitigate emissions and provide co-benefits for improved public health and safety, soil protection and pollution prevention, and energy supply

- How WTE by direct incineration and by SRF can potential reduce these emissions?
- How to evaluate the specific contribution on GHG reduction by these two options?

Politecnico of Milan has published some results on different strategies of energy recovery from residual waste, based on direct incineration in WTE plant and on SRF production and its subsequent co-combustion in industrial plants

Consonni, Giugliano, Grosso (2005a). "Alternative strategies for energy recovery from municipal solid waste."

Part A: mass and energy balances. Waste Management, 25, 123-135.

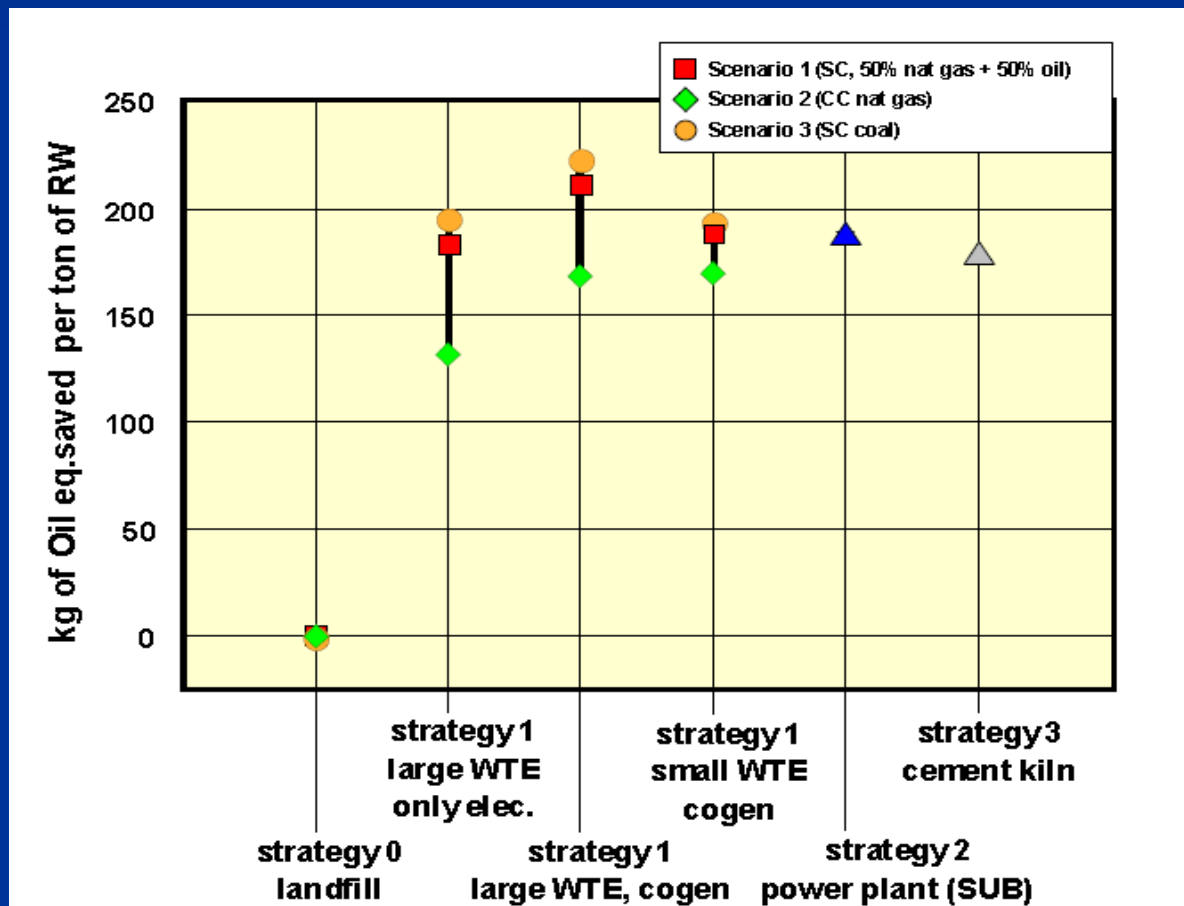
Part B: emission and cost estimates. Waste Management, 25, 137-148.

Input data	MSW	SRF
Amount on MSW (%)	100	53 <sup>(1)</sup>
NCV (kJ/kg)	10.000	17.000
Total Carbon Content (%)	28	42
Renewable Carbon Content(%)	58	52

*(1) SRF produced only by MSW*

The evaluation of primary energy savings, is strongly dependent on the hypothesised scenario for the avoided energy consumption.

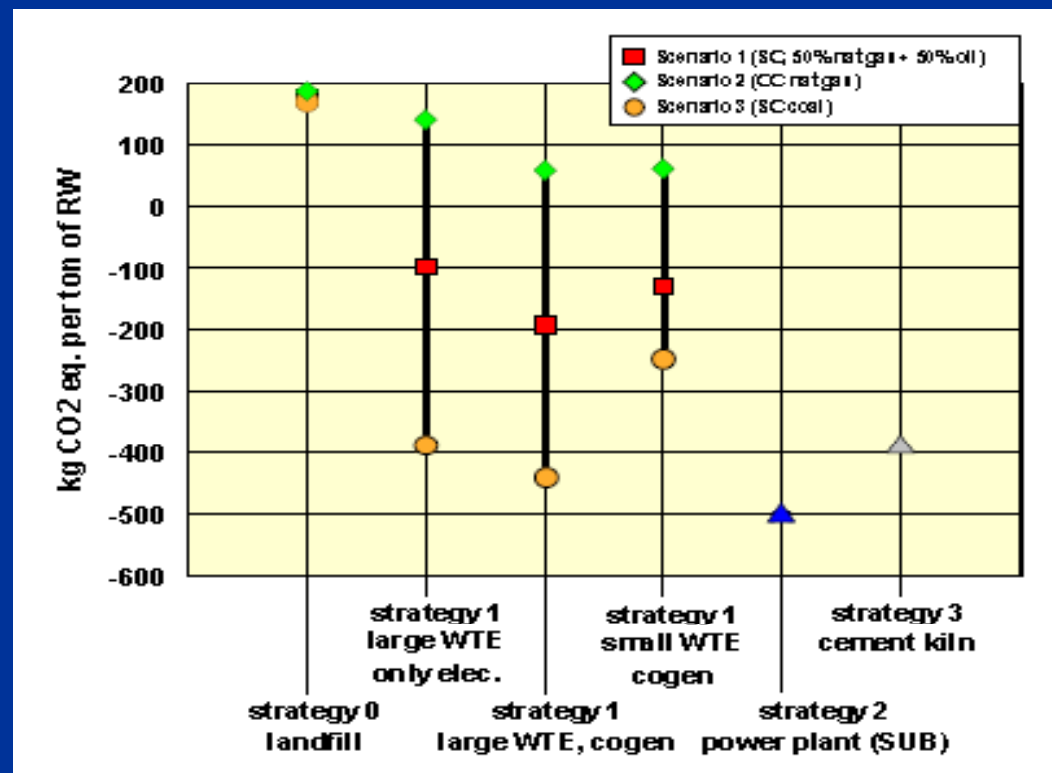
For co-combustion strategies this is more straightforward as the avoided primary energy equals the exact amount of coal or petcoke which is directly replaced by SRF



## About Emissions and other environmental indicators

It is clear that co-combustion of SRF gives lower GWP than MSW direct combustion into WTE plants, thanks to the direct replacement of coal.

But for both cases the specific result are absolutely very important to sustain any strategy based on the importance of the Energy Recovery from waste to reduce GHG



## About the potential market for the different strategies of energy recovery in the Italian context:

- While the recourse to dedicated WTE plants is in theory limited by the waste availability, the SRF co-combustion is obviously limited by the number and geographical location of existing industrial plants.
- As described into specific study done by Nomisma Energia and published in 2008 a massive recourse to SRF co-combustion in both the existing cement kilns and the coal-fired power plants envisaged for the near future might contribute to reduce by 7 Mt CO<sub>2</sub>
- Cembureau (2006) and recently (2009) also the Italian Cement Association (AITEC) confirm the large potential for "alternative fuels" on Italian market (3 Mt of alternative fuel - target 50% substitution primary energy)
- the Italian level of substitution (6%) is the lowest of all EU 15 (average 18%)

# Conclusions

- The Community Directive on waste (2008/98/EC) recently enacted provides important means to achieve such targets. Such legal instruments need to be transposed into Italian waste legislation which, as of today, does not sufficiently provide for such means.
- With a view to transposing the recent inputs set by the EU and attracting the required investments for introducing innovations within the national waste industry, it is already started the review of the Italian legislation on Renewable Energy Incentives, Regulatory Measures and Actions on priority materials, products and sectors, in order to put into practice the waste sector's potential for contributing to achieving a reduction in greenhouse gas emissions.

# Thanks for attention

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