

Waste can contribute to sustainability targets

According to current EU Directives, European waste management is required to undergo extensive changes. For instance, renewable waste fractions to landfill are to be reduced. Instead of being put on landfill, waste can be utilized, e.g. as fuel. This has a double greenhouse gas reducing effect, contributing significantly to the EU2020 targets.

From landfills to energy production

Jenny Sahlin has studied the potential for energy recovery from renewable waste fractions and to what extent this can contribute to accomplishing the European renewable energy- and climate targets for year 2020 (EU2020).

The current European waste management system is to a large extent based on landfilling of waste, which generally is the worst alternative from an environmental perspective. Not only is the material and energy resources of the waste not utilized, but there are also emissions to air and water, such as organic waste fractions decomposed into methane. The current European waste management system, presented in Figure 1, was the starting point of the study. Instead of being put on landfills, the renewable waste, that remain after biological treatment and material recycling, could be incinerated to produce heat for district heating and electricity.

About 20% of the GHG and renewable target

The results show that energy from waste has the potential of being an important energy source in Europe. If all the renewable waste fractions could be utilized as fuel, the total GHG emissions decrease would correspond to 25% of the EU reduction target to 2020 (“High” in Figure 2). However, this would require a heavy expansion of both incineration plants and district heating. If applying a historic expansion rate (last 10-15 years) of waste to energy plants in EU, the GHG reduction would still be significant: 14% of the total reduction target (“Low” Figure 2). The corresponding contribution to the target to increase the use of renewable energy would be 20% and 4%, for the high and low case respectively.

Double reduction impact

There are two explanations to the large reduction of greenhouse gases that results from energy recovery from waste: (1) the avoidance of landfilling the waste and thus avoiding methane emissions from the landfills; and (2) the replacement of fossil fuels for heat and electricity production. Both contribute about 50% each and both come from the indirect emissions reduced when energy from waste increases.

Conclusively, the ongoing transformation of the European waste management system could enable large energy recovery from waste, which in turn could contribute significantly to the targets to reduce GHG emissions and increase the use of renewable energy.

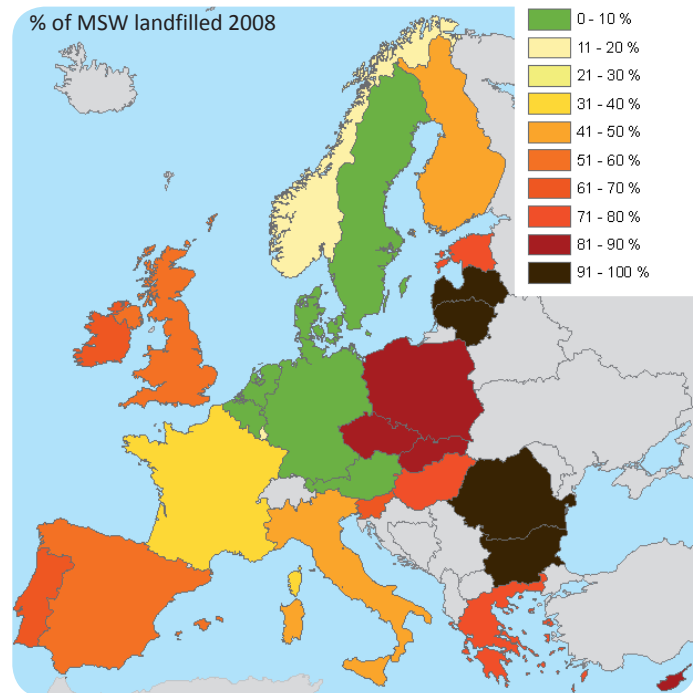


Figure 1: Share of municipal solid waste (MSW) landfilled in 2008. MSW mainly originates from households.

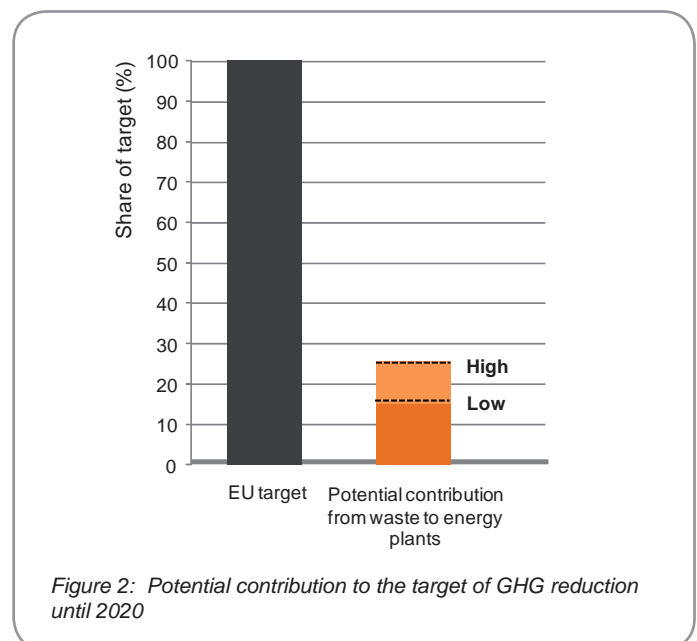


Figure 2: Potential contribution to the target of GHG reduction until 2020