



Incentive for recycling material

This study has investigated the consequences of a change within the EU Emissions Trading System (ETS), where the use of recycled fossil raw materials is rewarded above the use of primary fossil raw materials.

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The assumed reward means more specifically an introduction of a conversion factor of 0.5 for CO₂ emissions originating from recycled fossil raw materials (where emissions from primary fossil raw materials have a corresponding factor 1), which means that fewer emission allowances would be needed from recycled fossil materials compared with emissions from primary fossil raw materials.

A key issue for the study is whether such a reward of recycled fossil raw materials could lead to increased use of the same, a reduced use of primary fossil raw materials, and whether a reward would have consequences from a recycling and socio-economic perspective.

Three case studies

The impact of rewarding the use of recycled fossil raw materials through changes within the EU ETS was studied by analyzing the impact on three different types of industries in three case studies.

Case Study 1 is based on the Scandinavian Enviro System's (Enviro) process and represents a refinery using tires from end-of-life vehicles. In the process, recycled fossil raw materials are produced and the case study is therefore an



How can it become attractive to change from fossil raw materials to recycled? This project has investigated the effect of changed prices for emission allowances.

example of material recycling.

Case Study 2 is based on one of Boliden's processes at Rönnskärsverken where today's use of primary fossil raw materials, used as reducing agents, could be replaced by recycled fossil raw materials.

Case Study 3 is represented by Renova's waste incineration plant. In the process, district heating and electricity are generated from energy recovery of for example plastic waste not sorted out for material recycling. The three case studies involve material recycling, end use of recycled materials and energy recovery.

Not enough economically interesting

The case studies were evaluated based on different scenarios. The scenarios represented different price developments for emission allowances within the EU ETS, and the assumption that the use of recycled fossil raw materials will be rewarded over primary fossil raw materials in the EU ETS. Two different price levels for allowances were

studied: 50 SEK corresponding to today's price level, and a high price level of 500 SEK.

The results of the case studies show that rewarding use of recycled fossil raw materials in the EU ETS will not, by itself, provide sufficient financial incentives to increase the use of recycled fossil raw materials by replacing primary fossil raw materials. This also applies when the price of emission allowances is significantly increased compared to today's level. Although two of the case studies, Enviro and Renova, benefited economically from using recycled fossil material, this is not considered sufficient to make any changes in the companies.

Environmental gains in two cases

Results from the system analyses carried out to estimate climate impact and energy use show that there are environmental benefits both in the case of Enviro and Boliden.

The system analysis for Enviro is based on a production increase where the increased amount of received tires is compared with use as granulate on artificial turf or as energy in cement kilns. In the case of Boliden, a certain amount of coal is replaced with plastic waste. Since the socio-economic analysis is based on the amounts of CO₂-equivalents calculated in the environmental system analysis, socio-economic benefits are also obtained due to reduced CO₂ emissions.

Other policy instruments are required

The overall conclusion, based on the results from case studies and in discussion with the case study owners, is that the suggested rewarding of re-

cycled fossil raw materials within the EU ETS system would not, by itself, provide sufficient incentives for increasing the use of recycled fossil raw material and, thus, increasing material recycling. To attain the positive system benefits of an increased use of recycled fossil raw materials, this policy instrument would probably need to be combined with other policy instruments in order to overcome existing barriers.

In the project a brief literature survey of other policy instruments which could increase material recycling was also conducted.

Project facts

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