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PROJECT
Economics
Climate

Benchmark-Values for Refineries

In the EU Emissions Trading Scheme, the allocation of allowances to refineries and other industries increasingly relies on benchmarks, in which the most efficient plants set the reference for others. In this project, illustrative benchmarks are derived for CO2-emitting processes in refineries. The impacts of these benchmarks on the allocation of EU emission allowances to single installations are exemplified for selected refineries. Based on these insights, Ecologic provides advice on how to refine the allocation methodology.

Since the start of the second trading period of the EU Emissions Trading Scheme (EU ETS) emission allowances to new entrants and capacity extensions are allocated according to product-specific benchmarks. These benchmarks are based on the amount of GHG emitted by the least carbon-intensive production technology for particular products. Compared to grandfathering of allowances, benchmarks hence reward installations with lower specific GHG emissions per product. At the same time, over-allocation can be avoided, if benchmarks are sufficiently ambitious. This helps to maintain the economic incentive to reduce emissions as intended by the EU ETS.

In order to encourage the deployment of the most energy-efficient technologies, the amended EU ETS Directive stipulates that the free allocation of allowances shall be continuously reduced. In 2013 industrial sectors, which are not threatened by carbon leakage, are allocated no more than 80% of their emission allowances free of charge. At the end of the third trading period in 2020 this share will be reduced to 30% with a view to reaching full auctioning of allowances for industry in 2027.

Article 10a of the Directive sets out EU-wide ex-ante benchmarks for the remaining free allocation in order to avoid distortions of competition. The determination of these benchmarks shall take

account of "the most efficient techniques, substitutes, alternative production processes, high efficiency cogeneration, efficient energy recovery of waste gases, use of biomass and capture and storage of CO2 ". The starting point for each benchmark shall be the 10% of the most efficient installations of that sector within the EU. Furthermore, benchmarks shall, in principle, be based on products rather than inputs in order to maintain the emission reduction potential throughout all production processes of a sector.

In the oil refining industry, however, a product-based approach is not practicable. The variety of products and by-products is simply too large and cannot easily be aggregated to homogeneous groups of products. Moreover, refineries have higher degrees of freedom concerning their product portfolio setting than other installations. In contrast to product-specific benchmarks, differentiation according to technology or feedstock quality is undesirable for efficiency reasons.

Instead this project follows a process-based approach for the derivation of benchmarks in order to allocate allowances to certain process units. Despite the variety of specific configurations of refineries a limited number of processes such as raw oil distillation, sulfur and hydrogen production can be distinguished, which allow for setting individual process benchmarks. By means of process-based benchmarks, the incentives for optimization of separate process units can be maintained and the number of necessary benchmarks be kept at manageable levels.
The particular challenge with the implementation of this approach lies in the delineation of process units to previous and later process steps in refineries caused, for instance, by the import and export of process heat.

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