

Greening Chemistry & the Needed EU Regulatory Framework

1. Industrial transformation at BASF

BASF supports the Green Deal and the EU's ambition to be climate neutral by 2050, coupled with the right enabling framework for competitiveness and transformation to get there. BASF welcomes the declared objective of the Guidelines on environmental and energy State aid 2014-2020 (hereafter EEAG) of (i) preserving European competitiveness and (ii) facilitating the transformation toward the 2050 climate neutrality goal by enabling low carbon process development and faster substitution of carbon intensive energy carriers and feedstock from low-carbon energy.

For an inherent energy intensive sector such as chemicals – an industrial transformation means 'greening chemistry' but also maintaining the competitiveness of trade exposed strategic chemical value chains (base chemicals), which form the basis of 90% of the products and materials used today.

Since 1990, BASF has reduced its absolute greenhouse gas emissions by 50%, mainly by fuel switch from coal to natural gas, deployment of high-efficient Combined Heat and Power (CHP) and making manufacturing processes more efficient. At the same time BASF doubled its production volume. In many areas, however, thermodynamic limits have now been reached that make further savings through state-of-the-art technologies hardly possible. The economic survival of the chemical industry in Europe will, however, crucially depend on the fact that CO₂ emissions can be massively reduced very quickly.

The further transformation of the chemical industry towards climate neutrality therefore requires the development of completely new production technologies (which are expected to scale after 2030) that lead to the electrification of production processes.

At BASF we have set ourselves the goal of CO₂ neutral growth by 2030 (in light of an expected volume growth of around 50% during the same period) **and in parallel we are running our light house program called Carbon Management, which is centered around the development of first of a kind low carbon process technologies**, e.g. electric cracker, methane pyrolysis (CO₂ free H₂ production) and RES based electrification to make deep emissions reductions. However, moving to such abatement processes will require an abundance of electricity (3-4 compared to today's levels) which comes from renewable resources, due to the intrinsic nature of replacing fossil fuels with low carbon electricity.

Future industrial production will heavily depend on a secure and reliable RES electricity supply. Integrating large scale renewable electricity into industrial production and value chains requires not only a framework that allows for their cost-efficient procurement but also one that enables industrial consumers to utilize learning effects about efficient management of uncertainty, volatility and flexibility.

BASF therefore considers the upcoming EEAG review an opportunity to facilitate a durable and reliable framework for large-scale renewable integration for industrial use. Considering the enormous low carbon electricity needs for industrial installations, existing exemptions in the Guidelines relating to energy and electricity taxation must be preserved and improved. The basic requirement for the transformation is therefore the availability of large quantities of renewable electricity at competitive prices. **As such, renewable electricity surcharges/levies (and exemptions) and how they are detailed at EU level are decisive in whether, how and in which timeframe the transformation of industry can be achieved.**

2. Revision of EEAG must ensure removal of regulatory bottlenecks for industrial RES integration

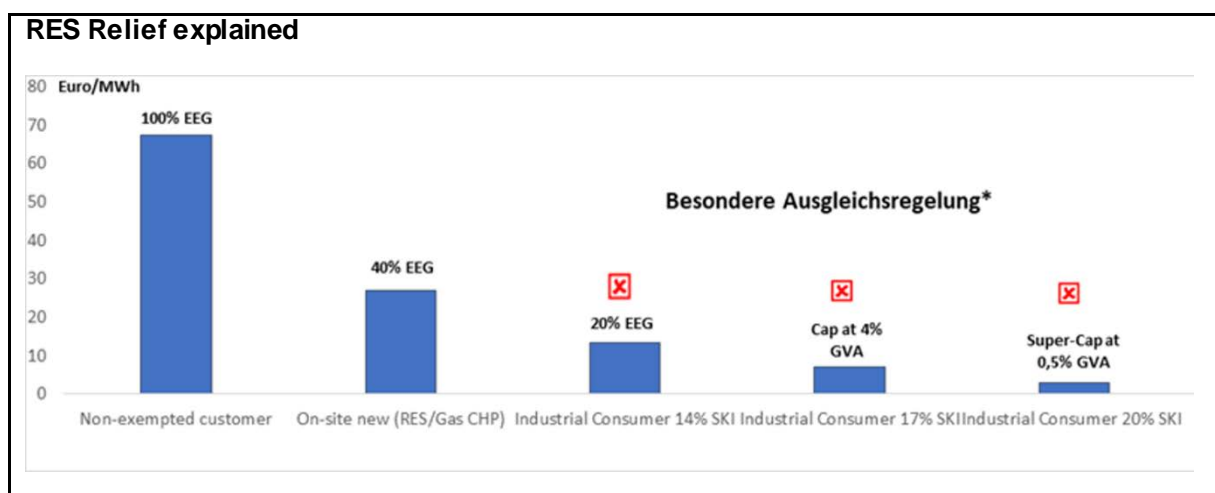
One of the key elements of an enabling policy framework is a review of the RES exemption approach in the EEAG Art 3.7.2. Given that low carbon process technologies are still in the making, and that the electrification challenge lies ahead of us, these rules must facilitate an uptake of RES for all industrial consumers, and in particular for those companies with concrete projects in the pipeline that will enable the achievement of the EU Green Deal objectives.

An enabling framework means allowing us for being exempted/relieved from policy-induced extra costs resulting from the EU Green Deal and higher climate ambition at EU and Member States level which are not faced by non-European competitors. This includes allowing for adequate hardship regimes, cost limits and specific measures for most exposed sectors via state aid rules in a non-discriminatory fashion. Electricity supposed to supply energy-intensive and trade-exposed processes should be treated equally along a transparent set of criteria, regardless of the legal set-up of a certain company.

Today, BASF today cannot qualify for EEAG/EEG “Besondere Ausgleichsregelung’s” cap/super-cap – special compensation scheme for electro-intensive undertakings, due to the way electro intensity is calculated (EEAG Annex 4) – as ratio of electricity costs to GVA at undertaking (legal entity) level. BASF SE’s GVA is huge, given our integrated production that includes many components which are not necessarily related to a specific energy-intensive manufacturing process. BASF SE’s GVA also consolidates personnel costs of 39,000 staff running global functions, R&D activities, earnings from subsidiaries etc. This huge GVA leads to a situation where BASF SE, at legal entity level, is not meeting the electro-intensity criteria qualifying for cap/super cap allowing the EEG levy to be limited (cap of max. 4% GVA or super-cap of max. 0.5% GVA), even though we have plenty of electro-intensive operations on site (see chart below).

In other words, BASF is currently not eligible for EEAG/EEG cap/super-cap which would limit EEG levy at very low levels – despite our huge RES integration potential (6 TWh). Any RES kWh substituting our CHP kWh would increase the cost of this very kWh by more than 100%, even if produced with own RES plants.

The current EEAG formula therefore does not reflect the technological and economic realities of deploying RES-based manufacturing in integrated companies and ‘penalizes’ EU headquarters which employ many employees. Exemptions based solely on electro-intensity as share of the GVA of a legal entity, provide a significant disadvantage for integrated companies like ours which have been optimized to compete in the global marketplace for decades.



3. Proposals for consideration in the EEAG and EEG

To kick start greening chemistry already in the short term, we will also need short term 'fixes', alongside more structural regulatory changes to the EEAG.

In the short term, this means that in the revision of the EEG (German Renewable Energy Act), the Commission would need to accept the purpose of scaling up EEG reductions for green Hydrogen projects based on a GVA below legal entity level i.e. at process level.

In the mid-term, to increase the uptake of large-scale RES for industrial consumers and transform our processes, operators of electro-intensive installations which procure their electricity from the public grid, or self-generate and consume, must either way receive the necessary exemptions from RES surcharges, when certain conditions are met. The eligibility for such surcharge reductions should be non-discriminatory and based on:

- i) undertakings operating in electro-intensive sectors and exposed to international competitiveness;
- ii) the intrinsic energy intensity of a given sector or process, and not according to whether a given legal entity has the optimum boundaries to reach a specific threshold.
- iii) accepting different ways of RES integration like grid-procurement, on-site generation or hybrid set-ups.

Our suggested policy proposals are outlined below:

Short term – EEG to kickstart RES based manufacturing technology deployment
<ul style="list-style-type: none"> BesAR GVA at process level /for H2 and other RES-based manufacturing projects
Medium Term - EEAG framework to deliver the EU Green Deal objectives for industrial transformation
<ul style="list-style-type: none"> EEAG methodology Annex 4 – adjustment of boundary conditions to GVA <u>also</u> at process level. RES – no EEG levy if green power comes from wind/pv that's not or no longer funded by EEG (or any other RES support policy in Europe) Exemptions for RES levy relief, where concrete projects can be demonstrated, and RES can be integrated into site with CHPs or for PPA's Explicit inclusion for policy measures such as carbon contracts for difference for industrial manufacturing projects with high (and economically non-feasible) abatement costs State aid for broad range of low carbon technologies beyond CCS including regulatory sandboxing for certain innovations