Call for contributions: Competition Policy supporting the Green Deal
Wacker Chemie AG, 20 November 2020

Summary

- Increasing the amounts of CAPEX and OPEX oriented state aid will be necessary in order to secure that the EU's clean energy technologies develop and expand in line with the ambitious climate and energy targets set under the Green Deal.

- Access to competitively priced renewable electricity is the single most important factor for increasing global competitiveness of energy-intensive PV manufacturing in Europe and strengthening the attractiveness of renewable hydrogen as a business model vis-à-vis fossil-based production.

- Under current decarbonization scenarios, demand for renewable electricity is expected to remain significantly higher than supply. In cases where the high price of renewable electricity either endangers the global competitiveness or acts as a market barrier for investments into strategic clean energy technologies, increased OPEX-support on a national level is justified.

- **Example 1**: In order to secure a cost-competitive position for European energy-intensive PV manufacturing in the system competition with China and simultaneously enable their climate-neutral transformation, Member States should be allowed to set up an **industrial electricity price or contracts for difference** to ensure access to competitively priced electricity.

- **Example 2:** In cases where the comparatively higher OPEX costs act as a barrier for timely investments into renewable hydrogen production, Member States should be allowed to set up **contracts for difference** or **publicly supported PPAs** to ensure access to a competitive supply of renewable electricity, until market prices reach levels that make renewable hydrogen production competitive with fossil-based prodution.

State aid: Revising the EU state aid framework to better support the Green Deal objectives

Achieving the Green Deal objectives for climate and energy preconditions that Europe has a competitive and resilient renewable energy industry. This can only be achieved if European production capacities of existing clean energy technologies are strengthened (e.g. PV, wind), while scaling-up innovative technologies that will enable the cross-sectoral decarbonization with the help of renewable electricity (e.g. hydrogen, batteries).

While the common challenge thereby lies in increasing the competitiveness of industrial value chains, measures will need to target different objectives:

(1) **In the case of existing clean energy technologies, competitiveness needs to be guaranteed vis-à-vis global competitors, in order to maintain production in Europe.** (Example: PV)

(2) **In the case of new clean energy technologies, competitiveness needs to be guaranteed vis-à-vis fossil-based technologies, in order to move to climate-neutral production**. (Example: Renewable hydrogen)

State aid will be instrumental in the abovementioned cases, as it is unlikely that markets can provide the financial certainty for green business models to quickly scale-up or the necessary stability for existing producers to maintain globally cost-competitive production in Europe. For energy-intensive manufacturing, the most crucial factor will be whether access to renewable electricity can be guaranteed – both in terms of volume and price. From this perspective, the revised state aid framework needs to include support aimed for covering capital (CAPEX) and operational expenditures (OPEX).

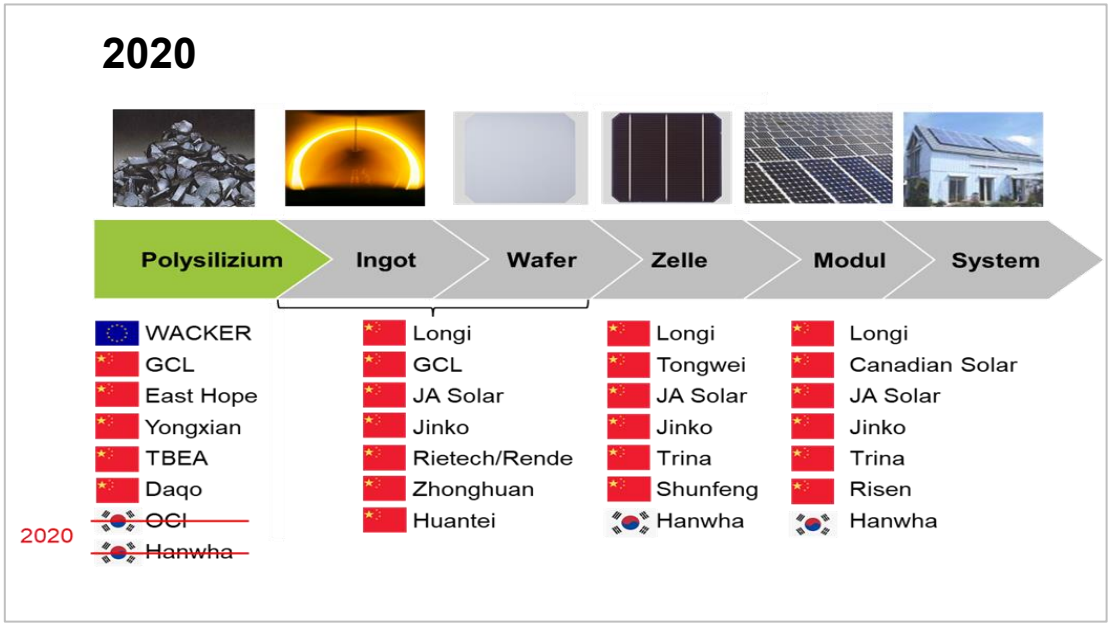
Example 1: Ensuring global competitiveness of European PV manufacturing with an industrial electricity price

As recently stated in the "*Competitiveness report on clean energy*", the observed decline of European competitiveness in the manufacturing segments of the PV value chain is putting the technological resilience of Europe's clean energy transition at risk. Unless this declining trend can be reversed, rebuilding a strong industrial base for PV in Europe seems unlikely.

While Europe was the global leader of PV manufacturing two decades ago, today about 90% of global wafer and ingot production has moved to China. Chinese producers were quickly able to expand into the upstream manufacturing of PV with the help of large-scale subsidized investments and electricity-prices, paving the way for cost-competitive production under its targeted industrial conquest for strategic technologies.

Today, Wacker and the power-intensive production of polysilicon is among the very few remaining parts of the PV manufacturing segment in Europe (Figure 1). The system competition with China is however not sustainable in the long-term: With electricity costs between 2-3 times higher than competitors in Western China, this cost gap is likely to further fuel the decline in cost-competitiveness. What's more, the simultaneous transition towards climate-neutral production is putting additional pressure on accessing renewable electricity at competitive prices. However, with the deployment of renewables still significantly lagging behind the market demand, market prices for renewable electricity are unlikely to reach globally competitive levels before 2030.

Figure 1: *Chinese dominance in the solar value chain has expanded rapidly in the last years. With Korean polysilicon producers OCI and Hanwha recently announcing to exit the business, WACKER remains the only leading polysilicon producer outside China (Source: Wacker Polysilicon).*

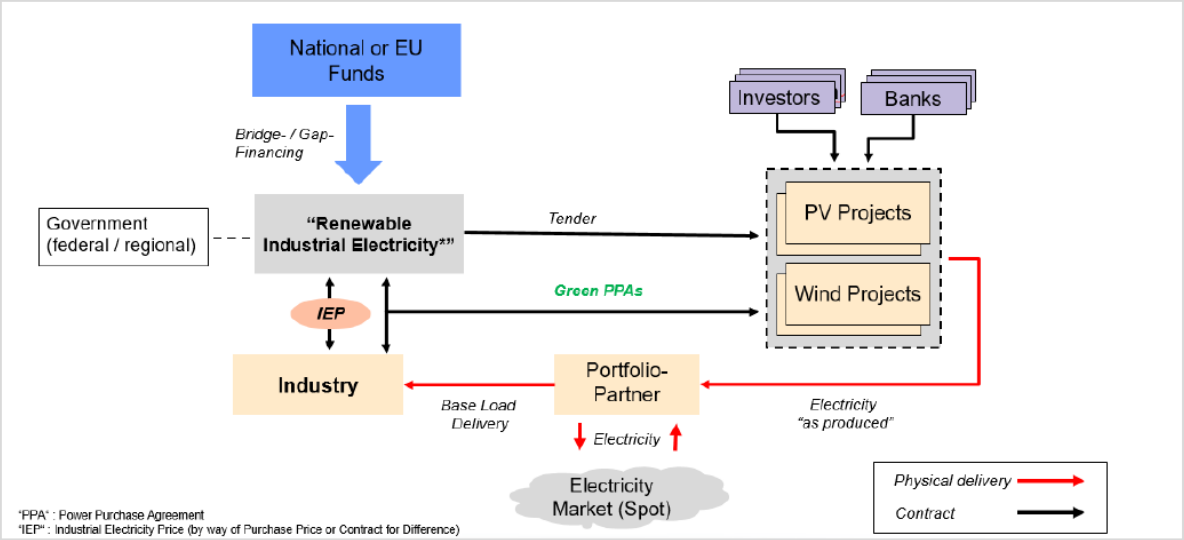


Recommendation for State Aid revision:

In order to secure a cost-competitive position for European energy-intensive manufacturing in the system competition with China and simultaneously enable their climate-neutral transformation, access to competitively prices renewable electricity is essential. For this purpose, Member States should be allowed to design OPEX-instruments for strategic value chains (such as PV) that ensure that sufficient volumes of emission-free electricity from renewable sources are available to permanently low electricity prices.

Establishing **industrial electricity prices** (Figure 2) is a feasible approach to complement existing carbon leakage protection with a nationally designed, financed and implemented instrument, with the purpose of bridging the economic feasibility gap between decarbonization and global competitiveness. Such schemes could be based on **Contracts for Difference (CfD)** with an independent authority that would guarantee a limited group of beneficiaries from carbon leakage risk sectors access to renewable electricity at a globally competitive price (currently <4ct/kWh). While the mechanisms could be financed on the national level, the strike price would be coupled and adapted on a regular basis to the respective price level developments of global key competitors. Furthermore, by concluding **Power Purchase Agreements (PPA)** with renewable energy producers, the beneficiaries could be obligated to increase their share of renewable electricity and decarbonize in a predictable manner, while contributing to a market-based integration of solar and wind energy

Figure 2: *An industrial electricity prices will incentivize decarbonization of energy-intensive manufacturing by granting access to renewable electricity, without compromising global competitiveness.*



Example 2: Making renewable hydrogen production competitive with fossil-based technologies

Hydrogen is well known to be one of the future molecules to help decarbonize energy and feedstock supplies of hard-to-abate sectors, if produced via water electrolysis powered by CO2-free electricity. The strategic objective of the EU is therefore to install at least 6 GW of renewable hydrogen electrolysers in the EU and the production of up to 1 million tonnes of renewable hydrogen by 2024 and up to 40 GW / 10 million tonnes by 2030.

Ramping up renewable hydrogen production is not so much of a technological issue, but more of an economic challenge of how to make renewable hydrogen business models competitive with fossil-production. Currently, less than 1% of world hydrogen production comes from

renewable sources. The reason for this can on the one hand be found in the high initial investment costs (CAPEX), acting as a barrier to enter the sector. The estimated direct investment needs for reaching the EU's targets amount up to EUR 24-42 billion, which will have to be mobilized within the next five years.[1]

On the other hand, the production costs of renewable hydrogen (EUR 3-5.5/kg) are still significantly higher than fossil-based (EUR 2/kg and pose a second investment barrier.[2] While this gap can be reduced by reaching higher efficiencies for electrolysers through economies of scale, the more crucial parameter remains the price of renewable electricity. However, in certain markets the price of renewable electricity is not projected to decrease sufficiently by 2030, in order to make renewable hydrogen an economically attractive option to fossil alternatives. This is especially the case for markets with rapidly growing demand for renewable electricity due to decarbonization pressure and where deployment and supply of renewable energy is still insufficient to cover the demand.

As a consequence, the significantly higher OPEX costs for renewable hydrogen vis-à-vis fossil-based production routes and uncertainty of economic profitability are likely to disincentivze private investment. State aid will therefore have to play a crucial role in overcoming short- and long-term investment barriers, since markets will not be able to provide the necessary leverage in order to reach the targets set for 2030.

Recommendation for state aid revision:

While the short-term investment barriers can be solved by the large-scale roll-out of CAPEX-support (e.g. ETS Innovation Fund), renewable hydrogen will only be competitive vis-à-vis fossil-based production in the long term, if the cost of renewable electricity is sufficiently low. As the biggest cost factor, the (projected) price of renewable electricity is therefore a significant determinant for the economic feasibility of renewable hydrogen as a stand-alone business project, once initial investment support (CAPEX) runs out.

In cases where the comparatively higher OPEX costs, mainly the price of renewable electricity, act as a barrier for timely investments, the revised State Aid framework should allow Member States to give targeted support to increase the relative competitiveness of renewable hydrogen vis-à-vis fossil-based production.

Such OPEX-instruments should be time-limited and aim at bridging the cost gap vis-à-vis fossil alternatives until the market price of renewable electricity reaches competitive levels. Promising designs for providing a stable investment framework, could be publicly supported long-term **contracts for difference** or **PPAs** with renewable energy providers that is granted in the form of a "green" industrial electricity price to a limited group of beneficiaries (Figure 2).

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[1] The rapid expansion of RES remains the fundamental precondition for the success of scaling-up renewable hydrogen production. From now to 2030, an amount between EUR 220bn and EUR 340bn would be required to scale up and connect 80-120 GW of solar and wind generators to the electrolysers to supply the necessary electricity, Report on progress on clean energy competitiveness, COM(2020) 593 final.
[2] Ebd.