VERBAND KOMMUNALER UNTERNEHMEN e.V.

POSITION PAPER

On the European Commission's draft for a Taxonomy Complementary Delegated Act covering certain gas and nuclear activities

Focus: Technical screening criteria for a substantial contribution to climate mitigation by gas-fired combined heat and power plants

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The German Association of Local Public Utilities „Verband kommunaler Unternehmen" (VKU) represents around 1,500 local public utilities in Germany, operating in the sectors of energy, water/waste water, waste management and telecommunication. In 2019, VKU's members, which have more than 283,000 employees, generated a turnover of around 123 billion euro of which more than 13 billion euro were reinvested. In the end-customer segment, VKU's member companies have a market share of 62 percent in the electricity market, 67 percent in the natural gas market, 91 percent in the drinking water sector, 79 percent in heating supply market and 45 percent in waste-water disposal. Every day, they dispose of 31,500 tons of municipal waste through separate collection and take a vital role in ensuring recycling rates of 67 percent, which rate the highest within the EU. Additionally, more and more local public utilities are committed to the deployment of broadband infrastructure. 203 members invest more than 700 million euro every year. When deploying broadband infrastructure, 92 percent of local public utilities rely at least on fibre to the building.

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DIE KOMMUNALEN UNTERNEHMEN

Introductory remarks

For the largest economy in Europe, the question of a **reliable electricity supply** is existential. Especially for the extremely ambitious project of a parallel phase-out of nuclear energy and coal-fired power generation, it is important to guarantee security of supply for Germany as an **industrial centre**, but also for its citizens. In addition to a massive expansion of renewable energies, controllable power plants play a central role, as all available studies have shown.

The German Association of Local Public Utilities' (VKU) basic position is that gas-fired power plants and gas-fired combined heat and power (CHP) plants should **not be planned and operated as long-term fossil generation plants**. Instead, they serve to stabilise an energy system that is increasingly characterised by renewable energy plants. Consequently, they **ensure their accelerated deployment**. This is another reason why, from the end of the 2020s, no more plants should go into operation that are not prepared for conversion for the use of 100% hydrogen (H2-ready, see respective definition proposal by the German associations bdew, VKU, VDMA below).

The **demand for new gas-fired power plant capacities forecast in the course of the energy transition is enormous**. While according to the German Federal Network Agency (Bundesnetzagentur, BNetzA), just 2.3 GW have been registered for construction by 2023, conservative estimates already assume a requirement of **15 GW** by 2030. The Institute of Energy Economics at the University of Cologne even speaks of **23 GW** and the Federation of German Industries (BDI) of **over 40 GW**.

Yet, the function of new controllable gas-fired power plants and CHP plants, which is increasingly geared towards peak load and security of supply, already places **greater demands on their (re)financing**. Therefore, in addition to a suitable market design and state support, it is all the more important to adequately classify these plants as **sustainable activities in accordance with the EU taxonomy** in order to allow for them to be constructed and operated on the basis of economic financing.

Therefore, **VKU welcomes** that the Commission has now actually proposed a complementary **delegated act on the taxonomy also covering certain gas activities** and intends to publish it by the end of January. With this, the Commission is providing a temporary recognition of gas as a transitional activity in the taxonomy, also on the grounds that renewable energies are not yet available to the necessary extent.

Significance of the proposal for local public utilities

The proposals on CHP plants, heat generators and heat networks in the Commission's draft for a delegated act affect the business activities in the heating market of **around 600 local public utilities** (approx. 4.4 billion turnover, approx. 10,000 employees in 2019)[1]. It is estimated that around one third of the companies are particularly affected as district heating or district cooling suppliers. In addition, the proposal is also of relevance for local public operators and project developers of object-based CHP plants and uncoupled gas-fired power plants.

In light of the German phasing out of nuclear energy and coal and the again stricter climate targets for 2030 as well as implementation schedules of several years, **investment decisions by local public utilities amounting to billions of euros** are imminent. They will decisively shape the transformation of the German energy system by 2045. In order to maintain **security of supply** for electricity and heat, it is essential that new H2-ready gas-fired power plants are built, both as CHP plants and as only electricity-generating power plants, as stated in the 2021-2025 German coalition agreement. In particular, local public district heating utilities are under **very high pressure** to act, as they must, for example, replace coal-based electricity and heat generation[2] in a timely manner while at the same time maintaining security of supply.

For their transformation concepts towards more renewable energies and unavoidable waste heat, local public heating suppliers in many large German cities are expecting investments of 500 million euros and more by 2030. Nationwide, the investment requirement in the expansion/conversion of heating grids and generation plants amounts to **around 33 billion euros by 2030**.[3]

Due to the **striking gap in the economic viability**of climate-neutral district heating compared to fossil-generated district heating, the persistent delay of several years in the funding programme „Bundesförderung effiziente Wärmenetze" and the challenging simultaneity of the conversion and expansion of the heating grids – i.e. the need for higher quantities of heat, which at the same time is to be produced in the most climate-friendly way possible – there is also a need for considerable investment in CHP plants, which will be operated with natural gas until hydrogen is available, on the heating side in order to make it possible to achieve the climate targets in the heating market as well.

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[1] https://www.vku.de/fileadmin/user_upload/Verbandsseite/Publikationen/2020/2020_VKU_Zahlen_Daten_Fakten_WEB_EN_ES.pdf

[2] In 2019, around 32 TWh of district heating was generated from coal in addition to electricity. Cf. AGEB (2020): Evaluation tables on the energy balance for the Federal Republic of Germany 1990 to 2019.

[3] Prognos, Hamburg Institut (2020): Expert opinion „Perspectives for district heating", commissioned by AGFW, p. 7, https://www.agfw.de/strategien-der-waermewende/perspektive-der-fw-7070-4040/.

VKU's key positions

In general, VKU **welcomes** that the Commission's draft provides a **temporary recognition of gas as a transitional activity in the taxonomy**, also on the grounds that renewable energies are not yet available to the necessary extent. This remark deserves special mention. From our point of view, it is also positive that the draft contains alternative options for meeting the requirements compared to previous versions and defines a higher threshold value as permissible if additional conditions are met. At the same time, from the point of view of local public utilities, the criteria for classification as a sustainable economic activity are still extremely demanding and **in parts in need of concretization and correction**.

We are particularly concerned with the following points:

a) The already known GHG emission **threshold value of 100g CO2e/kWh**, which is based on **life cycle emissions**[4], is still not feasible in practice. In principle, a **limitation to the plant operation time** in the sense of direct emissions and a **budget calculation on the basis of realistic annual full-load hours** (association proposal supported by VKU: 820kg CO2e/kW p.a. total output as a basis) seems preferable.

b) For plants for which a construction permit is granted until the end of 2030, alternative requirements are foreseen. However, the proposed **alternative threshold** value of 270g CO2e/kWh seems to be **just as unfeasible** as the option of a budget value of 550kg CO2e/kW p.a. (extrapolated over 20 years), which is only granted for electricity generation plants. Both criteria cannot be met even by the most modern plants with transitional fossil gas operation. This holds especially if these plants firstly have to be operated more flexibly at the expense of efficiency and secondly if there is not yet sufficient hydrogen available after the conceded emission quantities have been used up, but the plants have to be operated to maintain security of supply.

   In addition to electricity generation plants, the budget approach should at least also be applicable by CHP plants, as the threshold value of 270g CO2e/kWh is also not practicable for CHP plants – especially in view of increasing flexibility requirements. In general, a budget value of at least 820kg CO2e/kW total output p.a. should be provided or the threshold value should be increased to at least 330g CO2e/kWh.

   The **minimum requirement** for the proposed target is that its compliance should be **conditional on the sufficient availability of carbon-neutral gases at competitive prices**. This is particularly important for the specified blending rates of 30

[4] This includes emissions from the extraction and transport of fuel as well as from the production and disposal of plant components.

percent and 55 percent from 2026 and 2030, respectively. In return, operators would have to ensure **H2 readiness** for power plants for which a construction permit is granted after 2030.

c) In addition, the requirement to **replace coal- and oil-fired plants**, the accompanying **emission reduction targets** and the **capacity limitation for new construction and modernization** must be called into question. The latter would be equivalent to an **expansion stop, especially for CHP and district heating**, and would completely counteract a socially acceptable and supply-safe heat transition. The capacity limit should therefore be dropped at least for those plants that are **100 percent H2-ready when authorised**. The requirement to switch to 100 percent climate-neutral gases by 2035, however, must again be made dependent on their availability and price competitiveness. In general, in view of the EU's 2050 climate neutrality target, it must be questioned whether the requirement for a complete switch to climate-neutral gases in 2035 is proportionate.

Without the adjustments outlined, there is a risk that CHP, which can already combine climate protection and security of supply today and in the future, will not be able to fulfil its important role in the ongoing transformation of the German energy system. The financing of CHP and power plant projects must not be severely hampered by requirements that are not achievable in the foreseeable future, even for the most modern plants. Any additional hurdle makes it more likely that the substantial new construction of gas-fired power plants envisaged in the German coalition agreement will not take place. The most likely consequence would be a continued climate-damaging use of coal-fired power plants that are currently in reserve, as well as electricity imports for which there is no guarantee that they are not fossil.

VKU's positions in detail

Annex I, 4.30. – High-efficiency co-generation of heat/cool and power from fossil gaseous fuels

I. Introduction of an alternative emissions budget for CHP plants (1. b ii.)

VKU considers it absolutely necessary that the Commission adds a **practicable GHG emissions budget** under 1. b ii.) as an **alternative** to the currently envisaged GHG threshold value of 100g CO2e/kWh for a significant contribution to the environmental goal of climate mitigation of CHP plants (1. a)), as envisaged by the Commission for uncoupled gas-fired power plants (4.29, 1. b)). Even with optimistic assumptions (technical progress, optimised part-load operation), the currently envisaged threshold value of 270g CO2e/kWh is hardly achievable in practice.

This **GHG emissions budget** should be set as an emission limit per kilowatt (kW) of installed net thermal and electrical capacity and year, at a minimum of **820kg CO2e/kW** and calculated on average for the entire operation time of the plant (so far proposed are 550kg CO2e/kW for uncoupled gas-fired power plants).

> *This budget approach pays off in terms of climate protection and security of supply at the same time. GHG emissions are effectively limited over the operating life of the plant, while still allowing for flexible plant deployment. Flexibly controllable power generators are essential as a supplement to volatile renewable power generation. These residual power plants must be highly flexible, sometimes at the expense of efficiency, and will have significantly lower full-load utilisation hours in the future (back-up capacity). The budget approach thus makes it possible to optimise plant operation and fuel composition under the restriction of an emissions budget over the plant's operating life and taking into account the uncertain availability of climate-neutral fuels and compatible plant technology.*
>
> *With an emission budget of 820kg CO2e/kW, even with a very optimistic emission value of 30g CO2e/kWh, less than 3,000 full-load hours per year would remain, which would cover a maximum of 60% of the normal amortisation periods over a 20-year period. Consequently, the budget would be used up after about 12 years, and a complete fuel change would be necessary. With an emission budget of 550kg CO2e/kW, as proposed by the Commission, only about 1,800 full-load hours would remain per year, which would cover only about 35% of the normal payback period over a 20-year period. Consequently, the budget would be used up after about 7 years. A complete fuel switch would, therefore, have to take place 5 years earlier compared to the already ambitious budget level of 820kg CO2e/kW.*

In light of the lack of availability of climate-neutral gases in sufficient quantities and competitive prices at this point in time, the proposed budget value is considered to be significantly too low. Even under the conditions proposed by VKU and other German industrial stakeholders (820kg CO2e/kW), there is still a considerable investment risk, as the plants in question would be obliged to actually be able to convert to predominant or complete H2 operation in the course of the 2030s. With 550kg CO2e/kW, this would be impossible to achieve for plants to be realised in the near future, according to the current state of knowledge. And, this is despite the fact that the state of the art was deliberately based on optimistic assumptions.

GHG emissions for which the plant operator is not responsible should in general be excluded from the budget – for example, a mode of operation required by the grid operator in the course of a positive redispatch. As part of the regular review of the technical screening criteria (as foreseen by the Regulation establishing the Taxonomy framework, Article 19(5)), the amount of the emissions budget could be evaluated and adjusted if necessary.

In case our proposal for an alternative fulfilment option via an emissions budget is not taken up, VKU considers it necessary to define the threshold value for gas-based CHP plants proposed so far under 1. b ii.) in direct CO2 emissions and to raise the threshold value to a minimum of 300g CO2/kWh energy output on an annual average (alternatively at least 330g CO2e/kWh instead of 270g CO2e/kWh). Increasing requirements for more flexible plant operation as a back-up for volatile renewable energy, for example through higher electricity decoupling or partial load operation, lead to higher CO2 intensities via efficiency losses. This should be taken into account through higher threshold values.

II. The specification of blending quotas for climate-neutral gases should be deleted or at least made dependent on their availability and price competitiveness (1. b vi.)

VKU considers it absolutely necessary that the condition proposed in 1. b vi., which requires plans or obligations for blending climate-neutral gases of 30% and 55% from 2026 and 2030 respectively, be deleted or at least made dependent on a corresponding market offer at competitive prices. After all, the blending rates mentioned go well beyond the availability of hydrogen currently envisaged in studies.

For example, the studies "BDI-Klimapfade 2.0", Agora "Klimaneutrales Deutschland 2045" and the dena study "Aufbruch Klimaneutralität" assume in their economically optimised scenarios that the use of hydrogen in electricity and district heating generation will essentially only take place in the mid-2030s, but then with a high dynamic.

It is not at all secured and especially not to be guaranteed by plant operators that the gap that is opening up to the proposed quotas can be covered by biogenic or synthetic gases. Accordingly, it has to be assumed that the largest part of the admixture quota will have to be realised via hydrogen. Even if it were available, it could only be added to existing gas networks up to a maximum of 30% by volume. After that, a "leap" to 100% blending of hydrogen would have to be made, which would require a conversion of the gas grids or the capital- and time-intensive construction of pure hydrogen grids. This would have to be done by then in view of the proposed requirement of a complete switch to climate-neutral gases by the end of 2035, which is currently not deemed realistic but marked by insecurity. Therefore, also in view of the EU's climate neutrality target, which is only envisaged for 2050, it also has to be questioned whether this is proportionate as a binding requirement.

For the above-mentioned reasons, fulfilling the related condition should at least be made dependent on the **sufficient availability of climate-neutral gases at the power plant location at competitive prices**.

It seems more reasonable in general to accompany the threshold values with an **additional condition that ensures the H2-readiness** of new power plants and CHP plants. This can be another way to counteract a feared fossil fuel "lock-in". H2-readiness must also be placed in an inseparable context with a political course for the ramp-up of the hydrogen economy, the necessary transformation of the infrastructure and other framework conditions (see separate section on necessary framework conditions).

> *"Hydrogen readiness is foreseen for electricity (only) gas-fired power plants as well as for CHP plants with a rated thermal input of 1 MW or more. The use of 100% hydrogen in the final stage is intended through intermediate stages and / or retrofitting. The plant is hydrogen-ready if it is prepared to be retrofitted at a later stage for operation with 100 % hydrogen. If intermediary steps, such as 10 or 25 percent per volume of H2 for gas distribution networks, were to be defined at the political level, the definition should be adapted accordingly, while maintaining the final stage of a climate-neutral plant operation. To this end, concrete H2-readiness criteria that are comprehensible to auditors, experts and regulatory bodies must be formulated in a timely manner. The actual conversion of plants and their operation with hydrogen depends on the authorisation for the fuel conversion and the availability of the fuel. 100%-hydrogen-readiness cannot be guaranteed for plants whose permit for construction and operation has been applied for before the 31/12/2024 or that are in operation before the 31/12/2027."*[5]

[5] Association proposal by bdew, VDMA, VKU "Definition of H2-readiness for new gas-fired power plants", November 2021.

III. The requirement of replacing a coal-powered plant and related conditions are to be deleted; at least, the requirements should be critically questioned in light of the considerable need for additional secured capacity in Germany (1. b iv., v., vii, viii.)

VKU considers it reasonable to delete the condition proposed in 1. b iv., which provides for the **replacement of coal- or oil-fired electricity, CHP or heat generation plants**. As a consequence, other cumulative conditions providing for the associated **emission reduction targets** (1. b vii.) and **capacity limitation for new construction** (1. b v.) and **modernisation** (1. b viii.) should also be dropped. At the very least, the related conditions should be questioned with regard to the necessity of adding saved capacity, their practicability and their level of ambition.

In general, in light of the German phase-out of coal-fired power generation, it is positive that investments that lead to the replacement of coal-fired plants with new gas-based CHP plants are to be classified as sustainable.

However, it must be taken into account that Germany is also phasing out nuclear energy and that increasing sector coupling will lead to a strong increase in electricity demand. The additional demand for secured electrical capacity by 2030 is expected by studies between 15 GW and 43 GW. The peak value thus significantly exceeds the electrical capacity of coal-fired power plants currently still on the market (34 GW). It can, thus, be assumed that new construction projects will also be needed that do not directly replace coal-fired plants. These, too, make an important contribution to achieving the climate targets. Already today, up to 54 million tonnes of CO2 are saved annually through the use of CHP compared to uncoupled generation, according to the official CHP evaluation report.[6]

In addition to the critical unequal treatment of replacement and new construction projects, the **practicability of the related conditions** must also be questioned.

It is questionable to what extent the planned plant-based replacement is practically feasible. On the one hand, it must be taken into account that in current energy industry practice, the replacement of a coal-fired plant is carried out by a modular system of different gas-based and renewable generation plants (e.g. in Hamburg and Leipzig). It can therefore be assumed that if the system is retained, part of the existing electrical coal capacity will be lost without replacement. This further reduces the realisation of the above-mentioned necessary expansion. The replacement of coal-fired power plants with gas-fired CHP is

[6] Prognos et al. (2019): Evaluation of Combined Heat and Power. Analyses on the development of cogeneration in an energy system with a high share of renewable energies, p. 2; commissioned by the BMWi, available at: https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/evaluierung-der-kraft-waerme-kopplung.html

also disadvantaged because the capacity limitation (v.) is based on the total capacity. Due to the simultaneous generation of heat, a gas-fired CHP plant could not replace the electrical output of an uncoupled coal-fired power plant on a 1:1 basis (the heat capacity would have to be deducted from the total capacity). Against this background, as envisaged for uncoupled back-up power plants (4.29, 1. b iv.), a capacity increase of 15% should at least be granted.

On the other hand, with regard to practicability, it must be taken into account that coal sites are not per se suitable for new gas-fired power plants, since the decision on the location at that time was made on the basis of other criteria (especially proximity to the mining area or river). Moreover, making them usable for gas-fired power plants requires additional investments (e.g. gas connection), or electricity grid typologies must be taken into account to a greater extent (e.g. grid bottlenecks).

Even if the possibility should be granted to distribute the capacity of a coal-fired plant through several replacement plants, the question arises, for example, as to how the allocation of the "power plant slices" can be carried out in a non-discriminatory and abuse-free manner.

In light of the politically promoted **expansion and conversion of the heat grid systems**, the capacity limitation (1. b v., vii.) would also be equal to an **expansion stop** on the heat side. In addition to the conversion of existing heat grid systems to renewable heat and unavoidable waste heat, the expansion (new construction, extension) of heat grids is also politically encouraged. This twofold challenge can only be addressed in part by expanding CHP heat generation as an intermediate step, also due to the lack of climate-neutral sources that are currently not economically viable due to a lack of subsidies. However, the capacity limit would limit this potential and thus counteract a socially acceptable and supply-secure heat transition. It should therefore be dropped at least for those plants that are 100% H2-ready when authorised.

In addition to the capacity limitation for new replacement and modernisation, the **emission reduction target of 55 percent** (vii.) must be critically evaluated. When replacing hard coal with natural gas, CO2 emissions are reduced by 40 percent due to the fuel-specific CO2 intensity. However, the remaining 15 per cent would have to be achieved through a higher efficiency of the replacement plant compared to the coal plant. According to the CHP evaluation report, existing hard-coal CHP plants have an average overall efficiency of 80 percent. The gas-fired CHP plant would therefore have to have an overall efficiency of 95 per cent. Even the world's most efficient and powerful gas and steam turbine power plant in Düsseldorf "only" achieves an overall efficiency of around 85 percent. A further increase in efficiency – in order to achieve the ambitious target – would, among other things, be at the expense of the flexibility of the plants, which runs counter to the future

flexibility requirements as a back-up for renewable energy. In general, even minor improvements in efficiency can only be achieved today with a great deal of effort and at correspondingly high costs.

In the case of lignite, it would at least be conceivable to achieve the target due to the higher fuel-specific CO2 intensity, but it plays a subordinate role in general energy supply via local public CHP plants compared to hard coal.

Finally, the intended **unequal treatment of new-build projects compared to coal replacement projects should be dropped**. It is neither understandable from a sustainability point of view nor for reasons of security of supply. In both cases, decisive contributions are made to climate mitigation and security of supply in the electricity and heat sectors.

4.29 Annex I, 4.29 – Electricity generation from fossil gaseous fuels

It is positive that the budget approach was included as an alternative requirement in the Commission's draft for uncoupled gas-fired power plants. However, VKU considers the proposed level of 550kg CO2e/kW p.a. to be too low, especially for CCGT power plants in condensing mode. In order to enable an economic operation of these efficient power plants, the budget should be increased to 820kg CO2e/kW total output p.a.

If this is not possible, the alternative threshold value of 270g CO2e/kWh should be expressed in direct CO2 emissions and set at least at 500g CO2/kWh energy output on an annual average (alternatively: 550g CO2e/kWh).

As stated for CHP plants, the conditions for uncoupled gas-fired power plants should also be reviewed, especially with regard to blending quotas and coal substitution.

Annex I, 4.31 – Production of heat/cool from fossil gaseous fuels in an efficient district heating and cooling system

As stated for CHP plants, the conditions for district heating boilers should also be reviewed, especially with regard to blending quotas and coal substitution.

Additional regulatory conditions to the proposal for the wording of a definition for H2-readiness as mentioned above[7]

European and national policy-making must promote the ramp-up of the hydrogen industry more strongly than before. It must be ensured that gas-fired power plants are taken into account in the provision of hydrogen and in infrastructure adjustments.

Context: The power plant operator cannot influence the actual availability of the amounts of fuel and the infrastructure needed and therefore should not bear the responsibility if their lack makes it impossible to meet the conditions necessary for a permit.

As a condition for H2-readiness (for this German energy and manufacturer associations developed a corresponding definition), the eventual use of up to 100% H2 in the plant must be authorised as a first step. Authorisation guidelines for on-site authorisation practices concerning hydrogen must be quickly adapted and implemented in practice. Corresponding standardisation for necessary components, such as valves, is to be implemented as soon as possible. As this process cannot be influenced by the plant operator and requires time (2-3 years), compliance with the definition of H2-readiness cannot be guaranteed for plants for which the permit for construction and operation was issued **before 31/12/2024**. Importantly, as a second step, it should be possible to obtain a permit for using hydrogen as fuel without having to apply for a new permit for overall plant operation.

Concrete H2-readiness criteria that are comprehensible to auditors, experts and regulatory bodies are to be formulated quickly, in agreement with the sector, so that the power plant operators can give corresponding proof to their credit institutions (bankability).

The second date mentioned in the proposal for the wording of a definition, **31/12/2027**, should ensure that power plant projects in which considerable financial means have already been invested are not confronted with requirements that could not be foreseen in the current planning and/or construction process. This is a necessary transitional arrangement to avoid stranded assets.

The authorisation process for power plant projects must be accelerated significantly.

Corresponding financial support covering the additional costs of hydrogen readiness must be implemented quickly. It should cover the additional costs for H2-readiness occurring

[7] See also association proposal by bdew, VDMA, VKU "Definition of H2-readiness for new gas-fired power plants", November 2021.

during the initial planning and construction of the plant (date A, see above), the additional costs for the later conversion to 100 % H2 use (date B), as well as additional fuel costs (date C). For cogeneration plants, this could be accommodated in existing national legislation (KWKG) and for electricity (only) plants, new financing instruments should be introduced.

If used in the scope of the EU Taxonomy, the definition of H2 readiness should contain a legal safeguard for unforeseeable circumstances (such as pandemics) to ensure that the power plant operator does not bear their burden.

To enable both manufacturers and operators to provide the required capacities for H2-ready gas power plants and components, the sector needs clear commitments that plants running with climate-neutral fuels will continue to be needed in the energy system beyond 2045.

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