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## **Methane leakages at plants of the natural gas industry in Germany: Legal assessment and conclusions for the prevention of further methane releases**

### *Summary*

There are many methane leaks from natural gas plants in Germany. Under the current regulatory system, the resulting releases of highly climate-impacting methane emissions are not or only partially reported to the competent authorities, and the plant operators themselves may not be aware of them.

There is therefore a need for binding technical and inspection requirements, defined on the basis of objective criteria, on the part of the legislator in the Energy Industry Act and in the High Pressure Gas Pipeline Ordinance. The current regulatory system, which within the framework of a so-called "technical self-administration" refers mainly to the private regulations of a private association of the gas industry, does not guarantee the prevention of the release of highly climate-impacting methane emissions and, moreover, leads to incomplete reporting in the National Inventory Report under the Framework Convention on Climate Change.

Until an effective regulatory system is established by legislators and ordinance-makers, the competent authorities at the level of federal states can and must already take supervisory action by means of retrospective inspection requirements vis-à-vis all plant operators. Against the background of current investigation results and for reasons of climate protection, their discretion to intervene is in this respect at least significantly reduced, if not to zero.

## I. Facts

### 1. Climate impact of methane

a) Methane is an extremely climate-damaging greenhouse gas. Its impact on the climate is many times greater than that of carbon dioxide, by a factor of 34 over a period of 100 years and by a factor of 83 over a period of 20 years.<sup>1</sup> Methane emissions are negative boosters for the further progress of climate change. Even small(er) releases of methane are therefore of significant importance.

In its recent report on global methane emissions, "*Global Methane Assessment - Benefits and costs of mitigating methane emissions*"<sup>2</sup>, the United Nations Environment Programme describes the effect of methane emissions on average global warming.

According to this study, the (recorded) methane emissions of the natural gas industry alone have so far contributed 0.1 °C to global warming.

The fact that global warming is already just under 1.1 °C today, i.e. only 0.4 °C remain before the temperature threshold of 1.5 °C is reached, impressively demonstrates the dimension of the significance of methane emissions from the natural gas industry.

Reducing methane emissions in this area is therefore essential to avert the worst effects of climate change, as explicitly stated by the United Nations Environment Programme in its methane report.

b) Methane is one of the greenhouse gases whose emissions must be reported by the Parties in the respective national inventory reports under the United Nations Framework Convention on Climate Change.

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<sup>1</sup> See only *Intergovernmental Panel on Climate Change (IPCC)*, Sixth Assessment Report, Part 1, Climate Change 2021. The Physical Science Basis, 9. August 2021.

<sup>2</sup> *United Nations Environment Programme (UNEP)*, Global Methane Assessment - Benefits and costs of mitigating methane emissions, 6 May 2021, online at <https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions>.

Methane emissions can occur along the entire production chain in the natural gas industry.

Emissions from unreported or undetected methane leaks by operators are inevitably not included in the national inventory, which - of course - does not change their extreme climate impact.

## **2. Investigations by DUH and CATF**

The Deutsche Umwelthilfe e.V. (DUH), together with the Clean Air Task Force (CATF), randomly inspected natural gas industry facilities in five German states for methane leaks. The investigations were carried out with the help of an optical gas imaging camera (FLIR GF320), with which methane emissions can be made visible.

At the investigated plants, releases of methane emissions into the atmosphere were detected at different parts of the plant and documented by recordings.

DUH sent the image recordings to the state authorities in June/July 2021 and asked them to comment and to take the necessary measures to prevent the further unhindered release of methane emissions from the investigated plants into the atmosphere and to exclude it in the future.

All of the methane leaks identified by DUH and CATF were confirmed by the state authorities after they had consulted the operators or after on-site visits and after the documented findings had been sent to them.

Prior to the transmission of the investigation findings by DUH, the methane emissions in question were allegedly not known to the authorities. Whether the methane emissions detected by DUH and CATF were also not known to the individual plant operators beforehand, or whether they were possibly accepted with approval in any case, is a matter for debate.

The official letters of the DUH including picture documentation as well as the respective essential reactions from the federal states are attached to this expert opinion as

### **Set of exhibits 1.**

### **3. Results of investigations and reactions of authorities**

The situation in the individual federal states, including the sometimes quite different willingness of the authorities to clarify and deal with the results of the DUH and CATF investigations, is as follows:

#### **a) Bavaria**

aa) In Bavaria, the investigations were carried out at the compressor stations operated by the companies Open Grid Europe and Megal in Rothenstadt and Waidhaus. In April 2021, methane emissions from the main emergency ventilation were detected there by DUH and CATF. The methane emissions were documented in detail and reported to the *Bavarian State Office for the Environment* by DUH on 14 July 2021 (see the corresponding letter from DUH to the State Office).

bb) Responses to DUH have been provided by the *District Office of Neustadt an der Waldnaab* in consultation with the State Office for Environmental Protection and by the *City of Weiden*:

- (1) With regard to the Megal compressor station, the District Office informed DUH on October 20, 2021, that a gas emission had been detected on a blowout train indicating an internal

leakage of manual valves and of two automatically controlled safety valves. The manual valves were immediately repaired and additionally fitted with tight-sealing plug-in washers to prevent leaks at this point in the future. The internal leaks of the automatically controlled safety valves could only be repaired during a shutdown of the entire compressor station. The operator plans to repair the safety valves still in October 2021, provided that the spare parts are delivered on time and the shippers agree. Subsequently, a renewed inspection of the blowers for gas emissions would be carried out with the company's own infrared camera.

A corresponding official obligation on the part of the operator to carry out more frequent inspections, for example, does not appear to have been imposed.

- (2) With regard to the blowers of the Open Grid compressor station, according to the notification of the District Office of 20 October 2021, initially no visible gas emissions were detected. However, the letter sent by the city of Weiden to DUH on 29 October 2021 is different: on 28 October 2021, the operator confirmed the leaks identified by DUH and CATF. At the compressor station, a gas emission had been detected at a blower train, which was due to an internal leakage at one of 18 automatically controlled safety valve groups. This natural gas emission via the automatically controlled safety valves to the blower was stopped immediately. The operator had taken the incident as an opportunity to intensify the leakage checks on the station blowers.

A corresponding official obligation of the operator to,

for example, carry out more frequent inspections, has apparently not been carried out here either.

According to the city of Weiden, the problem and the monitoring of gas leakages would in future be dealt with more intensively, however, also within the framework of the official environmental inspections.

cc) Neither the District Office nor the City of Weiden name any legal or licensing bases that result in mandatory requirements *for* the operation of the compressor stations, in particular or especially *from a technical point of view with regard to methane emissions*.

Neither of them has apparently taken the results of the DUH and CATF investigations as an opportunity to subject *all* natural gas industry plants in their area of responsibility to a review.

## **b) Brandenburg**

aa) In Brandenburg, the investigations took place at Gascade's compressor station in Mallnow. There, methane emissions from the main emergency vent and, among others, from the compressor vent on the roof were detected in February, April and June 2021.

The methane leaks have been documented in detail and reported to the *Brandenburg State Office for the Environment* by DUH on 9 June 2021 (see the corresponding letter from DUH to the State Office).

bb) On 15 June 2021, the State Office informed DUH that it was in contact with the operator Gascade regarding the methane emissions. In the following, Gascade states in the weekly newspaper *"Die Zeit"* that the leak is indeed present, but that it does not represent a disturbance, "since the escaping quantity is far below the EU limit value". This statement is not substantiated - neither with regard to an EU limit nor with regard to the actual amount leaked.

The national office for environment communicates for its part on inquiry of the DUH on 18 June 2021 that there are no explicit reporting requirements for operators of gas compressor stations.

The relevant approval notice from 1996 for the Cascade compressor station in Mallnow made available to DUH, however, provides in its ancillary provisions in paragraph 1.7:

*"The competent surveillance authority (...) shall be informed immediately (...), at the latest within one week after the event, of all disturbances during (...) the intended operation as well as in the case of other events (...) which (...) may lead to damage to the environment."*

DUH did not receive an answer to its question of whether the operator had informed the State Environmental Agency about the methane leaks before the media reports.

Concrete measures to ensure releases of methane emissions determined at the plant in Mallnow by DUH and CATF in the future are excluded are also not specified by the national office for environment, thus apparently also appropriate obligations of the operator, for example to more frequent examinations, are missing.

Legal and licensing bases that result in mandatory requirements for operation, in particular or especially *from a technical point of view with regard to methane emissions*, are also not mentioned.

The state office has apparently not taken the results of DUH and CATF investigations as an opportunity to review *all* natural gas industry facilities in its area of responsibility.

### **c) Lower Saxony**

aa) In Lower Saxony, the investigations by DUH and CATF were carried out on a random basis from 23 - 26 February 2021, inter alia, in the case of

- the compressor station Folmhusen
- the compressor station Bunte
- the compressor station Visbek K45
- the compressor station Siedenburg East
- the compressor station Voigtei

- the Voigtei natural gas and oil production plant
- the underground storage Reden 1
- the compressor station Walsrode.

At all of the plants mentioned, methane emissions from various parts of the respective plant were detected. The specific plant components as well as the methane emissions have been documented in detail and communicated to the *Lower Saxony Minister for the Environment, Energy, Construction and Climate Protection* on 16 July 2021 (see the corresponding letter from DUH to the *Lower Saxony Minister for Climate Protection*).

bb) Despite the climate impact of methane, the Lower Saxony Ministry for Climate Protection does not see any competence justified in its area of responsibility and refers the matter entirely to the *Lower Saxony Ministry for Economic Affairs*.

In its letter of 22 September 2021, the Ministry in turn states to DUH that, after consultation with the *State Office for Mining, Energy and Geology (LBEG)*, the emissions "specifically addressed by DUH are neither leakages nor fugitive emissions". In all cases mentioned, the emissions were, according to the Ministry of Economics, "part of the approved work process".

What exactly, with regard to the methane issue in question of, the "approved work process" is supposed to be, is not named.

Furthermore, the Ministry of Economics states that "methane is not specifically recorded in these processes", so that no limit values exist. In addition, flares, for example, would have to burn a high percentage of the added substances, which would then (nevertheless?) result in a limit value. These statements are not substantiated.

cc) The reaction of the Lower Saxony Ministry of Economic Affairs shows - irrespective of the further legal classification (see point

II.) - first of all two things: the extent of the release of highly climate-impacting methane emissions from plants in the natural gas industry, even if it were to take place in an "approved working process", is apparently not known to the competent authorities - although such ignorance is apparently not regarded as incomplete by the Ministry of Economics, despite the climate impact and the international reporting obligations on the German greenhouse gas emissions inventory.

- On the other hand: The releases of methane emissions pointed out by DUH do not refer to flares at all, but to other parts of the plant. And insofar as they refer to flares, the visualisation of methane by the optical gas imaging camera proves that combustion is merely incomplete.

— The impression may therefore arise that the actual facts and their relevance for climate protection may not have been or should not have been taken into account at all.

Concrete measures - even "only" with regards to further clarification - as well as corresponding obligations of the operator in order to exclude the releases of methane emissions determined by DUH and CATF at the Lower Saxony plants in the future, are not named in any way, just as little as legal and licensing bases, from which compelling requirements for the operation result in particular or especially also in *technical regard with a view to methane emissions*.

Neither the Lower Saxony Ministry of Economics nor the LBEG have apparently taken the results of the investigations by DUH and CATF as an opportunity to subject *all* plants of the natural gas industry in their area of responsibility to an inspection.

#### **d) Saxony**

aa) In Saxony, the investigations took place at the compressor station of the Gascade company in Olbernhau. There, in May 2021, methane emissions were detected by DUH and CATF from two exhaust air chambers as well as from a chimney of the compressor station.

The methane leaks have been documented in detail and reported to the *state*

office for Environment, Agriculture and Geology Saxony by DUH on 14 July 2021 (see the corresponding cover letter from DUH to the State Office).

bb) The answer from Saxony was then given by the *Saxony State Directorate* on 6 September 2021, which is essentially limited to the reproduction of information provided by the plant operator Gascade to the State Directorate. Own findings on site or orders or similar for the future operation have neither been made nor were apparently considered by the State Directorate.

cc) Specifically, the Saxony State Directorate states that according to the operator, the compressor station had been running in May 2021 "in normal operation without any noticeable reportable incidents or malfunctions". The leakages identified by DUH and CATF were not recognisable for the operator at that time. However, an inspection carried out by Gascade in July 2021 as part of its self-monitoring activities did indeed reveal "irregularities" with methane leaks at the pig trap (long-distance natural gas pipeline) and at the blow-out system. The methane emissions were caused by a defective ball valve and two leaking valves. The operator would remedy the causes by the beginning of the fourth quarter of 2021.

The blow-out system is part of the compressor station and thus part of the immission control permit. A limit value had been set in the immission control permit for organic substances, among others, specified as total carbon. Significantly, there is no further statement on this limit value and on whether it is complied with or exceeded.<sup>3</sup> Instead, it is merely stated that the disturbance of the intended operation was not a reportable event, since the compressor station is not subject to the Major Accidents Ordinance (12th BImSchV - German Federal Immission Protection Ordinance).

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<sup>3</sup>Limits for methane emissions are regularly set as the "Total carbon" (see point II.1.).

However, explosion risks are not at issue in the present case.

In view of the fact that the operator had voluntarily announced the elimination of defects, there was no need for further action at the moment, according to the Regional Directorate. Consequently, the operator was not obliged to carry out more frequent inspections.

Legal and licensing bases that result in mandatory requirements for the operation of the compressor station, in particular or especially *from a technical point of view with regard to methane emissions*, are not named.

The state directorate has apparently not taken the results of the investigations by DUH and CATF as an opportunity to inspect *all* plants of the natural gas industry in its area of responsibility.

#### **e) Thuringia**

aa) In Thuringia, the investigations took place at the compressor station of the company Gascade in Rückersdorf in April 2021, where methane emissions from a chimney on the roof of the compressor station were detected by DUH and CATF.

The leakage of methane has been documented in detail and the *State Office for the Environment, Mining, and Nature Conservation of Thuringia* has been informed by DUH on 14 July 2021 (see the corresponding cover letter of DUH to the State Office).

bb) In its letter of 2 August 2021, the State Office stated that leaking solenoid valves had indeed been found through which methane had escaped, which had been visible on the blower on the roof of the hall. The findings of DUH and CATF were therefore correct.

The operator had undertaken to replace the causally defective components at the earliest possible date, so that, according to the state office, it could "be assumed" that after the solenoid valves had been replaced, methane emissions could no longer escape unhindered into the atmosphere.

The Greiz District Office would accompany the prompt implementation of the replacement of the valves and include their regular maintenance and the methane control measurements in the regular monitoring programme for the plant. In order to prevent such incidents in the future, the operator had informed that the valves in the maintenance plan would now be checked in a closer cycle.

cc) A corresponding obligation, for example in the form of a subsequent requirement, was apparently neither imposed by the State Office nor by the District Office; it remains solely a matter of a "Self-commitment" of the operator.

Legal and licensing bases that result in mandatory requirements for the operation of the compressor station, in particular or especially *from a technical point of view with regard to methane emissions*, are not named.

Neither the State nor the District Office have apparently taken the investigation results of DUH and CATF as an opportunity to review *all* the natural gas industry's facilities in their area of responsibility.

## **II. Legal assessment**

### **1. Methane limits**

In some cases, methane limit values are mentioned unspecifically in the federal state responses (see point I. above). In fact, methane limit values exist in German law, but in relation to plants that use gaseous fuels for production. For example, the Large Combustion Plants Ordinance (13th Federal Immission Control Ordinance - BImSchV)<sup>4</sup> provides limits for methane emissions from combustion engine plants, expressed as total carbon (cf. § 34 of the 13th BImSchV). The 44th BImSchV<sup>5</sup> "for

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<sup>4</sup>Thirteenth Ordinance on the Implementation of the Federal Immission Control Act (Ordinance on Large Combustion Plants, Gas Turbines and Internal Combustion Engines - 13th BImSchV) in the version of 6 July 2021 (BGBl. I p. 2514).

<sup>5</sup>Forty-fourth Regulation for the Implementation of the Federal Immission Control Act (Ordinance on Medium-Sized Combustion, Gas Turbine and Combustion Engine Plants - 44th BImSchV) of 13 June 2019.

Medium-Sized Combustion, Gas Turbine and Internal Combustion Engine Plants" contains in its § 16 emission limit values for total carbon, the Technical Instructions on Air Quality Control (TA Luft)<sup>6</sup> makes specifications, among other things, for methane releases during the operation of biogas plants, also with regard to the fermentation residue stores there.

However, such circumstances are not at issue in the present case. By their very nature, limit values can only be set for emissions that are expected during normal operation and are therefore to be limited by stipulations in the permit notice, not for unexpected emissions from leakages. For example, if a pipeline must be and remain "tight", it must not emit anything that could be regulated by a limit value.

Against this background it is astonishing that none of the answers of the authorities mention concrete technical requirements or relevant regulations for concrete technical requirements for the installations of the natural gas industry investigated by DUH and CATF.

## **2. Technical requirements**

### **a) Energy Industry Act**

aa) The Energy Industry Act (EnWG) is decisive with regard to technical requirements. Pursuant to § 49 (1) EnWG, energy installations are

*"to be set up and operated in such a way that technical safety is guaranteed. Subject to other legal provisions, the generally recognised rules of technology must be observed."*

According to § 3 No. 15 EnWG, energy plants are

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(BGBl. I p. 804), as amended by Ordinance of 6 July 2021 (Federal Law Gazette I p. 2514).

<sup>6</sup> First General Administrative Regulation on the Federal Immission Control Act (Technical Instructions on Air Quality Control - TA Luft).

*"Installations for the generation, storage, transmission or distribution of energy, unless they are used solely for the transmission of signals; this includes the distribution installations of the final consumers and, in the case of gas supply, also the last shut-off device upstream of the consumption installation".*

Compliance with the "generally acknowledged state of the art" referred to in § 49 (1) of the EnWG, in turn, is

*"presumed if the technical rules of the German Technical and Scientific Association for Gas and Water (Deutscher Verein des Gas- und Wasserfaches e.V.) have been complied with in the case of installations for the production, transport and supply of gas and hydrogen." (§ 49 (2) sentence 1 no. 2 EnWG).*

In other words, the Energy Industry Act itself does not specify any technical requirements, but refers in this respect to private technical regulation, namely the rules of the German Technical and Scientific Association for Gas and Water (Deutscher Verein des Gas- und Wasserfaches e.V.) (DVGW). The technical rules for installations in the natural gas industry are thus developed by the industry itself within the framework of a so-called "technical self-administration". A legal presumption exists in their favour.

bb) § 49 (4) of the EnWG then contains an authorisation for the Federal Ministry of Economics to issue its own ordinance laying down technical requirements.

With the High Pressure Gas Pipeline Ordinance (GasHDrLtgV)<sup>7</sup>, the Federal Ministry of Economics also made use of this authorisation, albeit not by specifying state technical requirements, but by referring once again to the private

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<sup>7</sup> Ordinance on High-Pressure Gas Pipelines of 18 May 2011 (Federal Law Gazette I p. 928), last amended by Act of 13 May 2019 (Federal Law Gazette I p. 706). The previous High Pressure Gas Pipeline Ordinance of 17 December 1974 (BGBl. I p. 3591) was amended by the Ordinance of 2011.

(and only available against payment) regulations of the DVGW, whereby the regulation even exceeds the presumption rule of the legislator in § 49 (2) sentence 1 no. 2 of the EnWG, which provides that it is "presumed by law" that the generally acknowledged state of the art is applied when the rules and regulations of the DVGW are complied with. In detail:

### **b) High Pressure Gas Pipeline Ordinance**

aa) The High-Pressure Gas Pipeline Ordinance applies to the construction and operation of high-pressure gas pipelines which, as energy installations within the meaning of the Energy Industry Act, serve to supply gas and which are designed for a maximum permissible operating pressure of more than 16 bar (§ 1 (1) GasHDrLtGv).

High-pressure gas pipelines include all equipment used for pipeline operation, in particular compressor, expansion, control and metering equipment, as well as pipelines or pipeline systems for optimising gas supply and gas delivery (§ 1 (2) GasHDrLtGv).

bb) Pursuant to § 2 (1) GasHDrLtGv, high-pressure gas pipelines must

*"comply with the requirements of §§ 3 and 4 and are constructed and operated in accordance with the state of the art in such a way that the safety of the environment is not impaired and harmful effects on humans and the environment are avoided".*

This means that the High Pressure Gas Pipeline Ordinance does not "only" focus on safety, but also requires the avoidance of harmful effects on people and the environment.

This was already the case under the old High Pressure Gas Pipeline Ordinance of 1974. It did not explicitly mention the requirement to avoid harmful effects on humans and the environment. However, the 2011 revision of § 2 (1) of the Ordinance does not explicitly establish a new operator obligation, but rather, according to the Ordinance's explanatory memorandum, in a declarative way

*"clarifies that high-pressure gas pipelines must be constructed and operated in such a way as to avoid adverse effects on the safety of the surrounding area and harmful effects on humans and the environment."* <sup>8</sup>

cc) The requirements under the High Pressure Gas Pipeline Ordinance are (actually) more stringent than those under § 49 (1) of the EnWG in that they do not merely require compliance with the "generally acknowledged state of the art", but with the "state of the art".

According to the Federal Constitutional Court, there is a graduated relationship between the generally *acknowledged state of the art*, which § 49 EnWG names as a benchmark, and the *state of the art*, which the High Pressure Gas Pipeline Ordinance (allegedly) takes as a basis.<sup>9</sup>

At the lowest level is the generally acknowledged state of the art, which must be generally recognised and, because of this broad technical consensus, only take up innovations and technical progress at a relatively late stage. In contrast, the state of the art is dynamic, which does without such recognition and therefore helps technical innovations to become established more quickly.<sup>10</sup>

§ 3 (6) of the Federal Immission Control Act (BImSchG) contains a legal definition of the state of the art. According to this, the state of the art is

*"the stage of development of advanced processes, equipment or methods of operation which demonstrates the practical suitability of a measure to control emissions to air, water and soil, to ensure the safety of installations, to ensure environmentally sound management of waste or otherwise to avoid or reduce impacts on the environment"*

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<sup>8</sup> See explicitly BR-Drs. 123/11, p. 23.

<sup>9</sup> BVerfG, decision of 8 August 1978 - 2 BvL 8/77, BVerfGE 49, 89 ff. (Kalkar).

<sup>10</sup> The strictest, third standard is the state of the art in science and technology. This comprises the latest technical and scientific findings and is not limited by what is currently feasible. The state of the art in science and technology is initially not relevant for the present expert opinion, see also in this respect the Kalkar decision of the BVerfG (fn. 9).

*to achieve a high general level of protection for the environment as a whole".*

dd) In fact, however, the requirements of the High Pressure Gas Pipeline Ordinance are not increased compared with § 49 of the EnWG. This follows from the assumptions of the High Pressure Gas Pipeline Ordinance:

Pursuant to § 2 (2) sentence 1 GasHDrLtgV, it is, inter alia,

*"presumed that construction and operation are in accordance with the state of the art if the rules and regulations of the German Gas and Water Association are complied with."*

The High Pressure Gas Pipeline Ordinance thus refers to exactly the same private set of rules as the legislator of the Energy Industry Act. The latter qualifies the set of rules of the DVGW as "generally acknowledged state of the art", whereas the Federal Ministry of Economics, as the legislator of the ordinance, qualifies it as "state of the art" without further ado.

This is all the more remarkable as the DVGW itself only explicitly classifies its rules and regulations as "generally acknowledged state of the art", cf. in this respect the corresponding DVGW self-descriptions, enclosed as

#### **Annex 2a and Annex 2b.**

ee) Why is this important? Construction and operation of the plants investigated by DUH and CATF are likely to have taken place on the basis of the Federal Immission Control Act or mining law. § 5 (1) no. 2 BImSchG requires as an operator obligation that

*"precautions are taken against harmful effects on the environment and other hazards, significant disadvantages and significant nuisances, in particular by means of state of the art technology".*

Pursuant to § 22b No. 1 of the General Federal Mining Ordinance (ABBergV), the Contractor shall

*"comply in particular with the state of the art in the exploration for and extraction of natural gas, crude oil and geothermal energy, including the fracturing of rock under hydraulic pressure and other activities connected therewith in operational terms..."*

The Federal Government states in connection with the General Federal Mining Ordinance that the state of the art (and not, for example, the generally acknowledged state of the art) implies the avoidance of the release of emissions such as methane.<sup>11</sup>

ff) In addition, it has been ruled by the supreme court that DIN standards are private technical regulations with the character of recommendations only. They cannot therefore determine the generally acknowledged state of the art in a binding manner. They may reflect them, but they may also fall short of them.<sup>12</sup>

This applies accordingly to the private rules and regulations of the DVGW and even more so with regard to the state of the art.

This, in turn, is also confirmed by the Higher Administrative Court (OVG) Lüneburg, which assessed the routing of the North German Natural Gas Pipeline (NEL), which was to be installed and operated in accordance with the rules and regulations of the DVGW, as not inherently safe and thus legally defective.<sup>13</sup> Even if the distances of the gas pipeline to residential buildings were at issue in this case, it is decisive that the court considered the distances, which in its opinion were insufficient, to be a violation of the state of the art. From the decision it can therefore be concluded

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<sup>11</sup> See BT-Drs. 19/32614, p. 5.

<sup>12</sup> BGH, Urt. v. 14 May 1998 - VII ZR 184/97, NJW 1998, 2814.

<sup>13</sup> OVG Lüneburg, decision of 29 June 2011 - 7 MS 69/11 et al, juris.

that the DVGW Standards and Codes of Practice are not to be equated with the state of the art.

This means that the legal presumption in § 49 (2) EnWG is already legally questionable, and that in § 2 (2) sentence 1 GasHDrLtgV is certainly so. In other words, compliance with the actual state of the art and with the requirements of the Federal Immission Control Act and the General Federal Mining Ordinance as well as - as a consequence - the avoidance of the release of methane emissions are not guaranteed by the current "mixture" of the EnWG/GasHDrLtgV/private DVGW rules and regulations.

gg) This also follows from the following: Pursuant to § 3 (1) GasHDrLtgV, high-pressure gas pipelines must be designed in such a way that they *remain leak-proof*.

Pursuant to § 4 (1), sentences 1 and 2 GasHDrLtgV, the operator of a high-pressure gas pipeline must ensure that it is maintained in a proper, i.e. leak proof, condition and that it is monitored and inspected. He must carry out necessary maintenance measures without delay and take the safety measures required by the circumstances. Pursuant to § 4 (1) sentence 3 no. 1 GasHDrLtgV, the following measures in particular are required:

*"The route of the high-pressure gas pipeline shall be inspected at regular intervals, in particular by walking, driving or flying. The local conditions shall be taken into account when determining the intervals. As a minimum, the intervals specified in worksheet G 466-1 of the German Technical and Scientific Association for Gas and Water (Deutscher Verein des Gas- und Wasserfaches e. V.) (as of April 2002) shall be observed."*

The DVGW is thus also responsible for defining the verification requirements with regard to compliance with its - own - rules and regulations.

Pursuant to § 4 (4) GasHDrLtgV, it is further "presumed" that the operator of the high-pressure gas pipeline fulfils the requirements for a management system to ensure technical safety as part of the operational management,

*"if it applies the Technical Safety Management System of the German Technical and Scientific Association for Gas and Water (Deutscher Verein des Gas- und Wasserfaches e. V.) or a comparable system and its compliance has been verified by an impartial, external body."*

This assumption has been emphatically refuted by the results of DUH and CATF investigations (see point I. above).

The previous assumption of the Federal Ministry of Economics as the issuer of the ordinance that the High Pressure Gas Pipeline Ordinance had "proven itself in practice" and that this applied in particular to the principle underlying the ordinance, according to which the safety of the installations is monitored independently by the operator, supplemented by a system of state supervision and that personally responsible experts are active in the inspection of the technical safety of the pipelines<sup>14</sup> is, in view of the results of the investigations of DUH and CATF no longer durable.

The Federal Government's current statement from October 2021 that the monitoring of methane emissions from the natural gas infrastructure in Germany is currently carried out on the basis of the rules and regulations drawn up by the DVGW, which regulate the monitoring of plants and pipelines at fixed intervals and prescribe the elimination of any leaks detected,<sup>15</sup> is therefore of no significance.

In fact, there are obviously considerable knowledge and recording deficits with regard to the actual methane emissions from plants of the natural gas industry in Germany.

The investigations of DUH and CATF show that inspections

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<sup>14</sup> BR-Drs. 123/11, p. 17.

<sup>15</sup> BT-Drs. 19/32614, p. 4 f.

by operators in accordance with the DVGW Standards and Codes of Practice may indeed not be carried out at all, but at least not comprehensively, not frequently enough and/or not with the proven and readily available technical possibilities, such as optical gas imaging cameras.

Methane leaks are numerous and are not detected by the operators. If they were detected but not reported, this would - of course - be just as much evidence of an inadequate inspection system.

### **III. Conclusions**

It follows from the foregoing:

The competent authorities of the federal states may not (any longer) leave the supervision of facilities of the natural gas industry to the operators solely on the basis of the private rules and regulations of the DVGW. They can and must take binding supervisory action.

In addition, regulatory action is required, on the one hand, by the legislator with regard to § 49 EnWG and, on the other hand, by the (new) Federal Ministry of Economics and Climate Protection by amending the High Pressure Gas Pipeline Ordinance:

#### **1. Supervisory action**

Pursuant to § 2 (2) sentence 2 GasHDrLtG, the authority may,

*"where more advanced processes, equipment and methods of operation are available which, in the prevailing opinion of leading experts, better ensure that harmful effects on man and the environment are avoided, and which have already been successfully tried in operation, demand compliance with them in individual cases."*

None of the requested federal state authorities has apparently so far considered issuing a *binding* order to the respective operator on this basis, for example, for regular inspections of the plant, or at least of certain parts of the plant, at short intervals by means of an optical gas-imaging camera. This must now be done.

In addition, the application of § 6 (4) GasHDrLtgV must be examined. Accordingly, the competent authority may prohibit the operation of the high-pressure gas pipeline or make it subject to conditions and obligations if

*"it subsequently transpires that the condition of the high-pressure gas pipeline or its mode of operation, including the operational management system pursuant to § 4 (3), does not comply or no longer complies with the requirements of the Ordinance, unless the operator proves that the safety of the high-pressure gas pipeline is not jeopardised as a result".*

Pursuant to § 3 (1) GasHDrLtgV and in view of the climate impact of methane, the supervisory authority must ensure that the pipelines are leak-proof and that methane leakages are excluded.

This applies not least against the background of the climate decision of the Federal Constitutional Court of 24 March 2021. The climate protection requirement immanent in Article 20a GG binds all state authority.<sup>16</sup> It requires

*"primarily measures to reduce greenhouse gas emissions".*<sup>17</sup>

For and in the application of § 2 (2) sentence 2, § 6 (4) GasHDrLtgV, the comprehensive substantive law consideration requirement from § 13 Climate Protection Act (KSG) must also be taken as a basis. Accordingly, the public bodies must take the purpose of the Climate Protection Act into account in their

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<sup>16</sup> BVerfG, decision of 24 March 2021 -1 BvR 2656/18 et al, para. 197 et seq.

<sup>17</sup> Cf. BVerfG, decision of 24 March 2021 -1 BvR 2656/18 et al, para. 198.

Decisions. The legislator states in the explanatory memorandum to § 13 (1) KSG:

*"The purpose of the law and the objectives set for its fulfilment shall be included in the considerations when making these decisions. In doing so, the significance of the decision for climate protection shall be determined and climate protection aspects shall be taken into account, unless there are conflicting, overriding legal or factual reasons."<sup>18</sup>*

It is not clear from the federal states responses that this has been done. This, too, must now be rectified.

Against the background of the - random - investigation results of DUH and CATF as well as from the presented overriding reasons of climate protection and its concretizations in Art. 20a GG and § 13 KSG, the discretion granted to the authorities in Section 2 (2) sentence 2 and Section 6 (4) GasHDrLtgV to take action against all operators in their area of supervision is likely to be decisively reduced, if not - at least for further inspection requirements - reduced to zero.

## **2. Regulatory needs**

a) For the necessary uniform administrative enforcement and in order to prevent methane leaks from occurring in the first place, but in any case to detect and rectify them immediately, binding technical and inspection requirements based on objective criteria are necessary.

By its very nature, the DVGW cannot do that. It is a private association and its members come from the gas and water industry. There is no doubt that the association has the relevant expertise. However, the regulation of the natural gas industry facilities operated by the association itself or its members inevitably involves subjective elements.

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<sup>18</sup> BT-Drs. 19/14337, p. 36.

It would be unrealistic to assume otherwise, not least because, according to its statutes, the DVGW, in addition to the "elaboration and dissemination of the DVGW rules and regulations", also aims to establish and maintain its own body of experts as well as to provide political advice and mediate expert opinions (see § 2 of the Association Statutes attached as **Annex 3**).

The methane leaks uncovered by DUH and CATF with relatively little effort and not only in individual cases, but in many cases, prove the deficits of a mere "reliance" on the DVGW rules and regulations.

b) After all, at the *legislative level*

- in § 49 (1) EnWG, at least with regard to methane emissions with a high impact on the climate, the *state of the art* should be anchored as *the minimum standard for installations in the natural gas industry*,
- At the same time, the *presumption rule in § 49 (2) sentence 1 no. 2 EnWG is to be deleted*; in future, the rules and regulations of the DVGW can only have the character of recommendations and even that only where the state of the art is not required.

c) At the national *regulatory level*, within the framework of an amendment to the High Pressure Gas Pipeline Ordinance (or by repealing it and issuing a completely new ordinance), the (new) Ministry of Economic Affairs and Climate Protection must lay down *mandatory operator obligations* which

- *provide for mandatory measurements at short intervals, reporting and verification of methane emissions, and*
- *for leak detection and repair at equally frequent intervals along the entire natural gas infrastructure; and*
- *limit flaring and venting.*

Overall, the state of the art must be used as a yardstick when specifying these operator obligations.

aa) For biogas plants, for example, leak tests are already required (albeit at excessively large intervals of three years) by "a Testing for leakages by means of a suitable, methane-sensitive, optical procedure" prescribed in the TA Luft as state of the art.<sup>19</sup>

bb) In addition, the European Commission's current proposal for an EU regulation *"on methane emissions reduction in the energy sector"* already provides a "working aid" for the German legislator (and conversely, the DUH and CATF study results and the described official handling of these results emphatically confirm the need for a binding set of regulations, as the European Commission is now proposing):

In concrete terms, the European Commission's proposal places responsibility on the competent public authorities in the Member States and provides for binding rules with regard to

*"accurate measurement, reporting and verification of methane emissions in the energy sector in the Union, as well as the abatement of those emissions, including through leak detection and repair surveys and restrictions on venting and flaring"* (cf. Art. 1 of the proposed Regulation).

Articles 4 et seq. of the proposed Regulation contain provisions for independent verifications. Article 12 regulates the measurement of methane emissions, both at source level and at site level.

Article 14 is entitled *"Leak detection and repair"* and thus specifically concerns the issues presented in this report. According to this, the operators of installations in the natural gas industry shall be required to draw up detection and repair programmes on the basis of the guidelines set out in Annex I of the

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<sup>19</sup> Cf. TA Luft on No. 5.4.1.15. (Technical Instructions on Air Quality Control)

proposed regulation, which they will have to submit to the competent authorities. The authorities, in turn, can make additional demands if the programmes are not sufficient. All relevant components of the respective installation must be covered; Annex I also provides further details in this respect. The detection and repair monitoring must then be repeated continuously at intervals of only a few months. Short repair periods are provided for leaks that are detected.

– The German legislator is in no way prevented from implementing corresponding provisions in national law even before the adoption of the rules proposed by the European Commission. In view of the many deficits identified and the extremely inconsistent administrative implementation in dealing with these deficits, a swift national regulatory initiative even appears to be called for.

cc) Finally, a new High Pressure Gas Pipeline Ordinance should also establish an obligation for the supervisory authorities to report methane leakages reported to them and/or discovered by them directly to the Federal Environment Agency, so that these are then included in the National Greenhouse Gas Inventory.

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