Wrong conclusions in DIW Report No. 50 by Franziska Holz and Claudia Kemfert, dated July 13, 2020

When I read the German Institute for Economic Research (DIW) report No. 50, written by Franziska Holz and Professor Claudia Kemfert, I was already irritated when reading the heading "New gas pipelines and LNG terminals are needless in Europe", because Merkel Energy GmbH had investigated the necessity and feasibility in 2017 of an LNG terminal in Germany[1]. As a long-time, former divisional head of Ruhrgas AG, I have been dealing since almost ten years as an expert for the energy transition with the challenges on the way to transforming our society towards a carbon dioxide-free European economy by 2050 at the latest. In the "real" design of this process, one has to consider many details and possible detours and cannot accept blanket statements and judgments that contradict the realities. For this reason, I feel compelled to challenge the key statements of this report.

I would like to focus my comments on two topics:

1. In the second sentence of their report, the DIW authors already claim that "natural gas is not more climate-friendly than coal". This is a false statement, which is to be reinforced by the subjective, only seemingly verifiable statement "Natural gas production is far more harmful to the climate than is often assumed". In their claims, the authors refer to two publications from 2015 and 2019 by Roger Howarth, Cornell University, Ithaca, from the USA. Professor Howath assessed the CO_2 and methane emissions from the use of fracking for the production of oil and natural gas in the US as extremely negative in terms of climate.

a. It would be interesting to know how are these publications assessed by other experts and especially by the environmental authorities in the USA and taken into account in the drilling licenses? The authors surprisingly do not go into such a critical appraisal of Professor Howarth's publications, although there are many interesting studies by other American experts on the subject.

b. Instead, the authors generalize Professor Howarth's findings on US fracking to natural gas in Europe that is not obtained through fracking, and claim that natural gas production is far more harmful to the climate than widely accepted and not more climate-friendly than coal.

c. Maybe the DIW authors could derive a demand for a ban on fracking in the USA, but I miss that!

d. It would be understandable if the authors would call for an import ban on natural gas and crude oil, which is produced by fracking in the US, at least taking into account higher supply chain

[1] https://www.ihk-oldenburg.de/geschaeftsfelder/unsereregion/Infrastruktur/Haefen/lngpotenzialstudie/3875346

greenhouse gas emissions of US gas in the future EU carbon border adjustment. But this requirement is also not to be found in the DIW report.

In 2016, the low supply chain greenhouse gas emissions of natural gas in Germany were documented in a study by DBI[2] and in 2018 in a study commissioned by the Federal Environment Agency[3], and the results of the 2015 EXERGIA study commissioned by the EU Commission were significantly corrected. The German Federal Environment Agency concludes "Even if the supply chain emissions of conventional natural gas are taken into account ... the advantages of conventional natural gas do not change compared to lignite and hard coal"[4].

It remains a fact, as has been proven in other studies, that conventional natural gas is an environmentally friendly energy, contributes to CO2 reduction and that methane emissions in Europe are strictly controlled and limited due to its high greenhouse gas effect. Natural gas is an important transition energy in Germany and is expected to be replaced by bio natural gas, synthetic natural gas and hydrogen by 2050.

2. The authors already claim in the title "New gas pipelines and LNG terminals are needless in Europe". The reasons given are that the importance and role of natural gas is declining in the long term, imports from Russia and Norway are sufficient for supply in addition to a small proportion of LNG, and supplies of LNG from other European terminals for German supply can be used in a severe supply crisis. This reasoning seems logical, but unfortunately it is scientific and theoretical and ignores the real situation.

a. The "revolutionary" changeover of our entire economy and society to a CO_2-free energy system implies immense risks, technical and economic challenges in the next 30 years, which we cannot even comprehend and assess today. Who, apart from maybe a few scientists, would take the risk of possibly throwing the economic foundations of our state, our economy and society on the wall and refraining from securing anything in this revolution? A realistic relapse position is required if our vision of a CO_2-free world turns out to be not so easy to implement.

b. The authors argue that wind and PV should immediately replace natural gas (and nuclear power, lignite and hard coal). This is wishful thinking and ignores the realities that show considerable resistance to the expansion of renewable energies. Natural gas and blue or turquoise hydrogen (based on natural gas) are the only realistic medium-term options that we have.

c. The authors have overlooked the reality of the natural gas market. The network development plan of the Federal Network Agency envisages a further expansion of transport capacities. This is not surprising if we ban other energy sources from the market. Even if we successfully replace natural gas in the long term, additional quantities and capacities of natural gas will have to be made available temporarily. This also results in temporarily higher import capacities.

d. Since Germany will have to live with the European regulatory framework for natural gas in the next 20 years, which requires a liquid and competitive market in which the wholesale prices at hubs are

---

[2] Kritische Überprüfung der Default-Werte der Treibhausgasvorkettenemissionen von Erdgas, DBI 2016

[3] Bewertung der Vorkettenemissionen bei der Erdgasförderung in Deutschland Kurzstudie 2018, DVGW-Forschungsstelle am Engler-Bunte-Institut des Karlsruher Instituts für Technologie (KIT) und Fraunhofer-Institut für System- und Innovationsforschung ISI

[4] https://www.umweltbundesamt.de/publikationen/bewertung-der-vorkettenemissionen-bei-der

based on supply and demand for natural gas, we in Germany cannot tolerate on one build a de facto duopoly from Norwegian and Russian gas, but again require additional suppliers. This is also why additional import capacity is absolutely necessary.

e. Our crux is that we need new gas supplies from a variety of sources after German indigenous production, Dutch, British and Danish natural gas are no longer supplied to the German market. As off-takers, we can only offer the new suppliers a medium-term, highly volatile and no long-term perspective. Which producers can we win and how to meet our demand? Large new pipeline import projects are difficult to justify because the transport systems require long payback periods. Producers will be reluctant to invest in new gas exploration and production if there are no long-term pipeline sales. This thought was alien to us in the old world, but we will have to accept that our energy market is no longer attractive for a pipeline gas supply by new suppliers. Our realistic alternative is to access the world LNG market. The investment for LNG terminals is comparatively small compared to new import transportation systems. Floating Storage and Regasification Units (FSRU terminals) can be removed after 20 years of chartering when there is no longer a need and can be used elsewhere in the world. The world LNG market is getting bigger and bigger and offers a growing share of spot quantities that are looking for sales in the short and medium term. We can purchase such quantities as required, in line with our progress in the energy transition, without long-term offtake obligations.

f. If Germany progresses faster or slower on the way to CO_2 neutrality in our economy and accordingly can forego LNG purchases on the world market faster or slower, this is manageable for LNG producers in contrast to a pipeline gas supplier, because LNG makes them flexible. Sending LNG carriers to other destinations will offer different marketing opportunities in the world LNG market.

g. Germany's connection to the LNG world market is much more important than any other LNG terminal in Europe, because Germany is by far the largest European natural gas market, has the largest storage capacities, the most transit lines in Europe and the highest number of dealers and customers in Europe. In short, Germany is the most attractive natural gas market in Europe. Obviously, you can win market participants who pay for the capacity bookings of the terminals and thus for the economic risk. This can be inferred from the statements by the LNG terminal developers in Brunsbüttel, Wilhelmshaven and Stade.

h. The DIW authors are opposed to new terminal infrastructure in Germany, although in the end they themselves admit that one should check whether the planned terminals are also suitable for hydrogen instead of LNG. In doing so, they lead their strict statement "new LNG terminals are needless in Europe" to absurdity. Indeed, there are a number of options for using LNG terminals in the future, whether for the import of hydrogen, synthetic LNG and bio-LNG. These alternatives have not yet been explored and analyzed. If you have no German terminals, this option for action is no longer available for German market participants and politicians.

i. The DIW authors are also mistaken in the expectation of being able to access free LNG import capacities in other European countries in a severe supply crisis. On the one hand, their claim of large free LNG import terminal capacities available for supplying Germany is misleading. On the other hand, many European terminals have been designed as national security measures and are often financially supported by national customers.

In a severe supply crisis - when the worst comes to the worst - terminal capacities are mostly used nationally and not made available for German supply, with the exception of Gate terminal, because German companies have booked capacities there. On the contrary, the German federal government and the natural gas industry will be held up to the fact that we, as Europe's largest gas consumer, have not complied with the many years of suggestions and requests from the EU Commission to invest in LNG terminal infrastructures as an instrument of security of supply.

k. The authors are obviously under the illusion that we have a single European natural gas market. We all had the illusion of a unified liberal market in the case of the Schengen Agreement. Nobody would have dared to forecast the closure of national borders five years ago. A few thousand refugees have led to the first collapse of the Schengen freedom of movement, not to mention the consequences of the Covid-19 pandemic, which completely blew up the Schengen Agreement. In the event of a severe natural gas supply crisis, this could be done in a similar way with the European gas market.

My conclusion is that it will be a challenge to implement new privately financed LNG import infrastructures, because Germany will no longer be a natural gas consumer in the long term due to our climate policy and will therefore become less and less attractive for natural gas suppliers. LNG terminal investments in Germany are absolutely necessary in the transition period to secure the energy supply in our revolutionary process towards a CO_2-free energy future.

Dr. Christoph Merkel Essen, August 3rd, 2020