

For delivery :
September 28st, 2020

VIA EMAIL

Ms. Sabine Sparwasser
Ambassador of the Federal Republic of Germany to Canada
Embassy of the Federal Republic of Germany
P.O. Box 379, Postal Station "A"
Ottawa, Ontario K1N 8V4
Canada

Dear Ambassador

Re: German Government Financing of the Pieridae Energy Goldboro LNG Project

We, the undersigned, are writing to bring to the attention of the German Government certain economic, financial, regulatory, supply, climate and environmental risks associated with the Goldboro LNG project ("the Project") that the proponent, Pieridae Energy ("Pieridae"), may not have shared with the Government of Germany ("Germany").¹

By way of background, all of the undersigned are opposed to the Project proceeding on numerous grounds and believe the Project is not in the Canadian or German public interest.

According to Pieridae,² Germany has made Pieridae 'eligible' for a \$US 4.5 billion loan guarantee for building the Goldboro LNG plant and for upstream development of additional natural gas supplies. It is our understanding that a decision with respect to the Pieridae loan guarantee has not yet been made and that one of the considerations Germany will make in arriving at a decision will be a determination of the financial risk to the German people.³

We believe that the risk factors that need to be considered by Germany in its decision making include economic, regulatory, financial, supply, climate and environmental, and human rights risks. We have reason to believe that Pieridae is not providing Germany with a full assessment of all of the risks associated with the Project. In light of that, please find attached a briefing note which we have prepared.

We respectfully submit that the Project has many risks that cumulatively lead to the inevitable conclusion that Pieridae's Project is extremely risky with a high probability of failure. We only ask that Germany proceeds in its decision making with respect to this matter with its eyes wide open.

Given that our briefing paper is essentially only a summary of issues, if Germany would like to discuss the details of the contents and conclusion of this submission, we would encourage it to reach out to any one of the main signatories at their indicated contact.

¹ <https://pieridaeenergy.com/>

² <https://pieridaeenergy.com/highlights>

³

https://julia-verlinden.de/userspace/NS/julia-verlinden/Dokumente/Dokumente_News/180831_Antwort_BurReg_SF_Verlinden_LNG_Goldboro.pdf

<https://www.andrej-hunko.de/start/download/dokumente/1253-unterstuetzung-der-bundesregierung-fuer-den-import-von-fracking-gas-aus-nordamerika-in-form-von-Ing/file>

Respectfully,

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Pieridae Energy Goldboro LNG Project

Briefing Note

Economic Risk

With respect to economic risk there are two aspects that we believe warrant consideration. First is the current viability of the North American natural gas markets and how that might impart Project risks to Germany. The second consideration is the level of financial, experience and technical capability required of a proponent to successfully bring a multi-billion dollar project such as Goldboro to fruition.

Pieridae intends to feed the Goldboro LNG terminal with gas from Alberta, New Brunswick and the eastern part of Quebec. They've said that they will also examine the case of the Sable offshore field in Nova Scotia as well as the Marcellus shale in the U.S.⁴ However, they've also said they won't use or develop fracked gas to supply Germany, which is highly contestable since most of these gas supplies either don't exist or could only be developed using fracking.⁵

The North American natural gas markets are in a period of significant disruption. The so-called shale boom, both in Canada and in the USA, has resulted in dramatic increases in natural gas supply, distortion in the supply demand balance, and historically low natural gas prices.

A recent study⁶ indicated that in order to be economically viable the delivered LNG price for exports from Eastern Canada using natural gas sourced in Western Canada would need to be \$11.17⁷ or higher⁸. CERI concluded that in the absence of significant government subsidies, Canadian LNG exported from Eastern Canada was not competitive with 2018 LNG spot prices. In the two years since the CERI estimate was published, spot prices for LNG have fallen to historic lows, with European LNG spot prices currently at \$1.80 as of August 20th⁹, 84 percent less than CERI's minimum required price.

Recent disruptions to the world energy markets including the Covid 19 pandemic have further depressed energy prices putting significant financial strain on the struggling North American oil and gas producers. Over a 5 year period ending April 1st, 2020, 215 Canadian and US producers have filed for bankruptcy involving more than \$129 billion in aggregate debt¹⁰. Further, an analysis of Canadian natural gas producers shows that 14 major natural gas producers who are listed on the TSX have lost ~ 75 percent of their market equity over the last 5 years and are finding it extremely challenging to attract new capital

⁴ Todd Kepler, CFA and Jonathan Temprow, MBA. Laurentian Bank Securities. "Pieridae Energy Limited - On Track to Become Canada's First Major LNG Exporter". January 16, 2018

⁵ Pascal Bergeron. "Will Pieridae feed its Goldboro terminal with fracked gas? An extensive review of available reserves". May 2020. <https://environnementvertplus.org/pieridae-goldboro-fracked-gas/>

⁶ Canadian Energy Research Institute. 2018. Competitive Analysis of Canadian LNG, 2018. Calgary, Alberta. 125 pg. https://ceri.ca/assets/files/Study_172_Full_Report.pdf

⁷ All LNG prices in this Note are \$USD per mmbtu.

⁸ LNG based on natural gas sourced in eastern Canada would have a break-even cost of \$8.09 but would rely on fracked gas supplies from the US Marcellus shale or from Nova Scotia, which is currently under a provincial hydraulic fracturing ban.

⁹ <https://bluegoldresearch.com/regional-lng-prices>

¹⁰ Oil Patch Bankruptcy Monitor. 2020. Haynes and Boone, LLP.

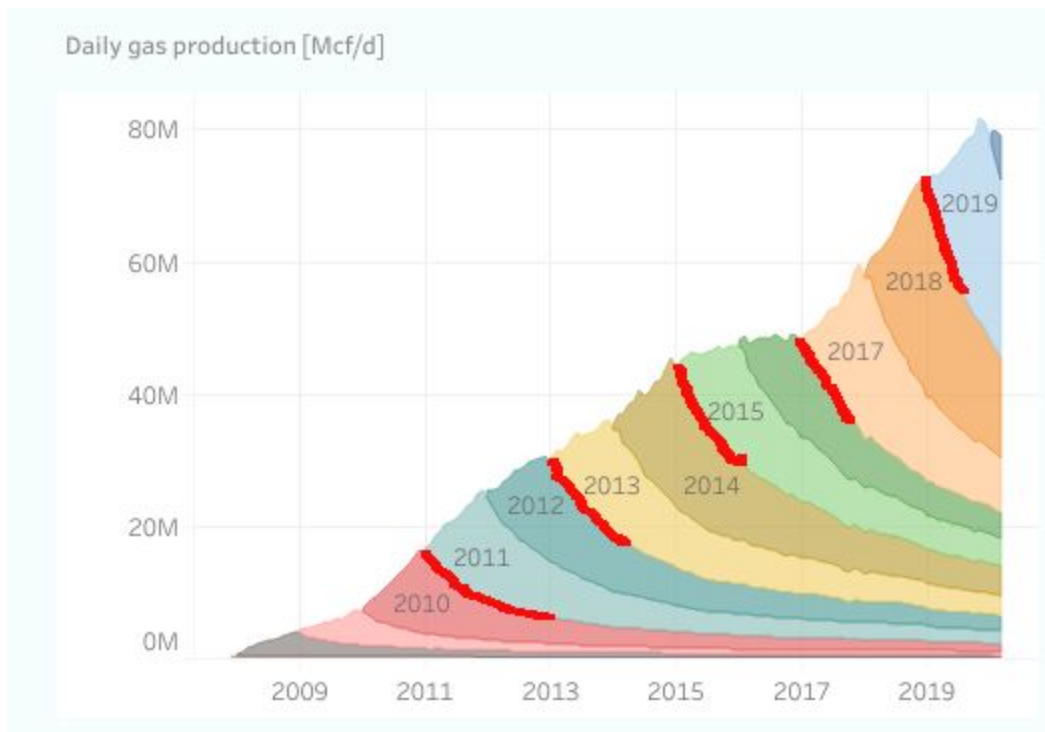
https://www.haynesboone.com/-/media/Files/Energy_Bankruptcy_Reports/Oil_Patch_Bankruptcy_Monitor

investment. Analysts are predicting many more bankruptcies in the North American oil and gas sector in the next few years¹¹.

While low natural gas prices may seem attractive to LNG buyers, if prices are so low that producers become insolvent or fail to secure new capital, any perception of value due to low natural gas prices will be offset by supply instability and the inevitable price volatility.

Pieridae suggests that it will eliminate this volatility by owning sufficient natural gas assets for the vast majority of its supply needs. That claim in turn depends on questionable drilling and development plans. The only realistic business plan available to a financially challenged firm like Pieridae will be to purchase gas supplies from the North American continental gas market, most of which is fracked gas.

Moreover, the figure below shows the cumulative well decline in the whole U.S. Fracked Gas sector. With each passing year, the decline of previous years continues to happen. This produces increasingly steep declines of wells drilled in the first 12 months of production (as shown the red lines in the Figure). This suggests that sweet spots are nearly all drained and that soon well depletion will be almost vertical, further cascading bankruptcies in the industry.



All drilling in the U.S. Fracked Gas sector.

(Source: Enno Peter, Shale Profile Analytics, <https://shaleprofile.com/>)

¹¹

<https://oilprice.com/Energy/Energy-General/US-Shale-Patch-Sees-Huge-Jump-In-Bankruptcies.html>

In light of foreseeable market conditions and given the deep disruption currently facing the North American oil and gas sector, we believe that there is significant risk that a small, under financed and inexperienced company like Pieridae will not have the capability to successfully complete the Project.

To put the foregoing into context, Pieridae is listed on the TSX and its shares have declined in value from \$5.50 CDN two years ago to a low of \$0.12 CDN few months ago. Pieridae is currently trading at approximately \$0.37 CDN (as of August, 20th). At its most recent reported year end, December 2018, Pieridae had an operating loss of \$18.04 million CDN. In addition to its financial limitations, we believe Pieridae does not have relevant experience to bring a major capital-intensive project to fruition nor does it have experience to safely and effectively manage complex, upstream, highly sour gas supply operations. We respectfully submit that there is significant risk that Pieridae will not have the financial resources or experience to successfully complete the Project.

Regulatory Risk

With respect to regulatory risk, a key component of the Pieridae scheme was to acquire sufficient upstream production capability so that it could supply its Goldboro plant from its own gas supply¹². To this end Pieridae announced in October 2019 that it had closed a deal with Shell Canada Energy (“Shell”) to acquire certain Shell midstream and upstream assets in southwestern Alberta¹³. The assets included three sour gas processing plants, several hundred sour gas wells and several hundred kilometers of sour gas pipelines. Now mostly a potential environmental liability to Shell, the assets would only account for a fraction of the gas needed to supply Germany.¹⁴ The sale of the Shell assets to Pieridae required regulatory approval from the Alberta Energy Regulator (“AER”). In large part because of the environmental liability associated with Shell assets and concern that Pieridae did not have the financial resources to ensure that those environmental liabilities would be mitigated, the AER received over 20 Statements of Concern from directly affected persons and corporations, all opposing the transfer of the Shell assets to Pieridae and requesting a public hearing. Additionally, Shell concurrently applied to the AER for authorization to retain ownership of the known groundwater environmental liabilities at two of the three sour gas plants, the Waterton and the Jumping pound plants. Shell assuming responsibility for the known groundwater contamination at these two sour gas plants was an integral component of the Pieridae’s acquisition of the Shell assets.

On February 28, 2020 the AER denied Shell’s application and neither Shell nor Pieridae appealed that decision within the 30 day time limitation.

As of today, the AER is still deliberating and has not announced how it intends to deal with the regulatory challenges of Pieridae acquiring the Shell assets. Should the AER decide to approve the transfer of assets, it is likely that such a decision will be subject to protracted court challenges.

¹² More on this below under Environmental Risk.

¹³

<https://pieridaeenergy.com/news/56-pieridae-energy-closes-the-acquisition-of-shell-canada-s-foothills-assets>

¹⁴ Pascal Bergeron. “Will Pieridae feed its Goldboro terminal with fracked gas? An extensive review of available reserves”. May 2020. <https://environnementvertplus.org/pieridae-goldboro-fracked-gas/>

Pieridae's scheme also requires additional regulatory approvals for an unprecedented number of new upstream sour gas wells. Since 1986, sour gas development in the Waterton, Jumping Pound and Caroline fields have met with fierce opposition from directly affected local residents resulting in numerous regulatory proceedings and subsequent legal challenges. We respectfully submit that it is unrealistic for Pieridae to assume that its proposed upstream sour gas developments will not meet with similar public opposition along with all of the attendant regulatory risks.

Environmental and Supply Risk and Negative Climate Impact

An important component of the Pieridae scheme and a significant driver for the need to acquire the Shell assets has been Pieridae's narrative that no hydraulically fractured gas will be required for supplying the first 'production train' of the Project. This is an important consideration because Germany has a national ban on fracking in shale layers, and the German government is the only serious investor so far to make even a tentative commitment to finance the Project. The problem with Pieridae's assertion with respect to not fracking is that it is untrue.

While it is true that the Shell assets have not used modern fracking technologies, an important consideration is that the three Shell sour gas fields being acquired by Pieridae are very mature fields that are nearing the end of their productive lives. In the case of the Caroline field, Shell has publicly stated that the field is 95 percent depleted¹⁵, while the Jumping Pound and Waterton fields are 65 percent and 75 percent depleted, respectively. Current production from the Shell assets is estimated to be approximately 250 million cubic feet per day; enough to provide only 35 percent of the total supply needed for Goldboro Train 1. In the absence of significant new drilling, with all of the attendant regulatory, financial and supply risk, we respectfully submit that Pieridae will not have sufficient gas within its own supply portfolio to supply the first train of the Project.

So where will Pieridae source the natural gas to supply the Project?

As mentioned earlier, Pieridae announced it would use gas from Western Canada, Eastern Québec, New Brunswick, the Sable play in Nova Scotia and the Marcellus/Utica play in the Northeastern U.S. to feed its terminal. An extensive analysis¹⁶ of all these potential sources demonstrates that they cannot together account for a full supply of unfracked gas to Germany. The so-called conventional reserves Pieridae acquired in Alberta would account for less than a third of Train 1 feed, the entirety of which is needed to fulfill the contractual obligation with Germany. Sable Play in Nova Scotia delivered the last of its gas in 2018, resources in New Brunswick and Québec are undeveloped but would require fracking to begin exploitation, and Marcellus and Utica plays are well known for their extensive use of hydraulic fracturing.

Moreover, in 2018, approximately 71 per cent of the natural gas produced in Canada was produced using fracking technologies.¹⁷ That percentage will have increased in the last two years. Canadian gas supply and demand occur within an integrated North American market where physical integration within the natural gas supply basins features extensive natural gas gathering and processing facilities

¹⁵ <https://www.mountainviewtoday.ca/local-news/sweet-future-for-shells-caroline-complex-1819373>

¹⁶ See Bergeron, op. cit.

¹⁷ <https://www.nrca.gc.ca/science-data/data-analysis/energy-data-analysis/energy-facts/natural-gas-facts/20067>

along with extensive natural gas transmission lines market hubs where gas prices are formed, and market liquidity is created. As a result, natural gas can be traded as a commodity, where a supplier's gas is mixed with gas from other suppliers into an integrated pipeline system. Thus, a customer, sometimes thousands of kilometers away, cannot determine or guarantee that the delivered natural gas is not, in fact, fracked gas.

Additionally, it is noteworthy that in at least one of the Shell sour gas plants, the plant remains economically viable only because it is processing gas from another Shell natural gas field where gas is currently produced using fracking.

To add to these concerns, Pieridae will need to build a new pipeline to transport its gas from Western Canada to Nova Scotia. Pieridae stated it will use existing pipeline systems to transport 800M ft³ of natural gas per day from Western Canada to Goldboro, with some adjustments to these systems.¹⁸ But the Trans-Quebec Maritimes pipeline, which connects Montreal to East Heresford, is already running at near-peak capacity, and it is unrealistic to assume that compression additions will solve the problem. The only avenue left would be to build a new pipeline along the Montreal-Portland route of the TQM pipeline, which would pose climate risks due to additional fugitive methane emissions¹⁹ and generate public opposition from local communities.

If the Project is built, Pieridae will most likely acquire the better part of their gas supply on the open market, and most of what is available is produced using high volume hydraulic fracturing. The large available sources are located in Western Canada and the Marcellus Shale in the US when pipelines to New England have spare capacity. We respectfully submit that Pieridae will not be able to produce sufficient non-fracked gas from the acquired assets and even if they did there will be no practical way to ensure that the LNG being delivered to Germany by Pieridae is not fracked gas. If Germany is serious about its climate commitments, Pieridae's scheme presents significant risk.

Human rights related risks

In May 2018, the German Permanent Peoples Tribunal (PPT) on Human Rights, Fracking and Climate Change heard testimony and received other evidence relating to fracking and its impact. Included were very substantial reports from four prior PPT that had gathered scientific, technical, social, cultural and experiential testimony from many community organizations, experts and individual citizens.

According to the preliminary statement of the PPT judges, "the evidence clearly demonstrates that the processes of fracking contribute substantially to anthropogenic harm, including climate change and global warming, and involve massive violations of a range of substantive and procedural human rights and the rights of nature.... The evidence also shows that governments have, in general, failed in their responsibility to regulate the industry so as to protect people, communities and nature. In addition, they have failed to act promptly and effectively to the dangers of climate change that fracking represents."²⁰

¹⁸ "Flou entourant la possible construction d'un pipeline en Estrie", *Radio-Canada*. March 7, 2020. Retrieved from: <https://ici.radio-canada.ca/nouvelle/1653778/environnement-goldboro-pipeline-pieridae-energy-estrie>

¹⁹ "Environmental Impacts of Natural Gas", *Union of Concerned Scientists*. June 19, 2014. Retrieved from: <https://www.ucsusa.org/resources/environmental-impacts-natural-gas>

²⁰ <https://www.tribunalonfracking.org/judges-statements/>

In the final Advisory Opinion, the PPT recommended that “fracking be banned” and that “the Special Rapporteur on Human Rights and the Environment be asked to investigate the violations of the rights of humans and nature by the Unconventional Oil and Gas Extraction industry.”²¹

This finding is echoed elsewhere: In October 2018, the UN’s CESCR issued an official warning concerning fracking for shale gas in Argentina, saying that “the Committee is concerned that this hydraulic fracturing project contradicts the State party’s commitments to the Paris Agreement, with a negative impact on global warming and the enjoyment of the economic and social rights of the world population and future generations. (Article 1 (1) and 2 ((1))”²² In March 2019 the United Nations Committee on the Elimination of Discrimination Against Women (CEDAW) urged the British Government to “consider introducing a comprehensive and complete ban on fracking.”²³

An additional concern with respect to the Pieridae scheme relates to the provisions of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) which was adopted in 2007 by a majority of 144 member states, including Germany.²⁴ One of the key provisions of UNDRIP is the concept of “free, prior and informed consent”. In the case of Pieridae’s proposed acquisition of the Shell assets in Alberta or with respect to any developments in eastern Canada that are necessary for the Project to proceed, “free, prior and informed consent” of indigenous communities was not obtained. The signing by Pieridae of a Benefits Agreement with the Indian Act Nova Scotia Mi’kmak Chiefs does not in any way constitute compliance with the crucial UNDRIP requirement of free, prior and informed consent. Nor has Pieridae met that standard in the case of its proposed acquisition of the Shell assets in Alberta.

Summary

In summary, we respectfully submit that Pieridae has proposed a massive project requiring very significant capital investment that will demand significant skill, technical expertise and business acumen if it is to succeed. Given the vagaries of the continental and international natural gas markets, even that may not be enough to guarantee success. On top of that we have identified risks associated with Pieridae’s financial limitations, the regulatory risks undermining Pieridae’s acquisition of the Shell Alberta sour gas assets, and the geological and regulatory risks associated with Pieridae’s proposed upstream developments. With respect to environmental matters, if a condition of German investment in the Pieridae scheme is that the gas supply not be fracked, we have raised serious concerns about Pieridae’s ability to satisfy that requirement. However, no matter if fracked or not, LNG coming from Canada to Germany will definitely be on a collision course with the climate obligations under the Paris Agreement - let alone given the economic lifespan of up to 50 years for such projects.²⁵ Finally, we have

²¹ Permanent Peoples’ Tribunal. „Session on Human Rights, Fracking and Climate Change. 14-18 May 2018. Advisory Opinion. Available at: <https://www.tribunalonfracking.org/wp-content/uploads/2019/04/AO-FINAL-3-28-19.pdf>

²² CESCR - International Covenant on Economic, Social and Cultural Rights. E/C/12/ARG/CO/4 https://tbinternet.ohchr.org/_layouts/treatybodyexternal/SessionDetails1.aspx?SessionID=1200&Lang=en

²³ CEDAW - Concluding observations on the eight periodic report of United Kingdom of Great Britain and Northern Ireland, C/GBR/CO/8

https://tbinternet.ohchr.org/_layouts/treatybodyexternal/Download.aspx?symbolno=CEDAW%2FC%2FGBR%2FCO%2F8&Lang=en

²⁴

<https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html>

²⁵

<https://www.theguardian.com/environment/2019/jul/03/booming-lng-industry-could-be-as-bad-for-climate-as-coal-experts-warn>

raised the matter of UNDRIP and Pieridae's failure to receive free, prior and informed consent from indigenous communities affected by their Project.