LNG and Climate Change: The Global Context

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Pembina Institute: A think tank headquartered in Drayton Valley, Alberta. The organizations' mandate is to advocate for sustainable energy policies through research, education, consulting and advocacy. Pembina Institute was founded in 1985 after a sour gas accident highlighted the need for tougher regulations in the energy sector. The institutes' mandate has since expanded to advocating for sustainable energy policies across Canada.

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Article Objective:

The article presents a critique of the underlying assumptions for using Liquefied Natural Gas (LNG) to help control Greenhouse Gas Emissions (GHG).

Article Summary:

The assertion that LNG exported from BC to Asia would reduce overall global GHG emissions makes two critical assumptions:

1. Increasing the supply of LNG will decrease the use of Coal.
2. The overall Lifecycle GHG emissions, from extraction to consumption, of LNG are lower than those of coal.

While LNG can be an important bridge fuel that can be used to help reduce overall GHG emissions, without proper oversight and public policy LNG also has the potential to become a large contributor to emissions itself. When analysing the impact of increasing LNG supply coal is often assumed to be a direct supplement for LNG. Thus assuming that an increase in LNG will have an inverse impact on coal. For LNG to act as a bridge fuel and help in the overall reduction of GHG emissions the following conditions must also be met:

1. There must be less demand for all fossil fuels relative to business as usual
2. There must be more demand for renewable and nuclear energy
3. Less overall demand resulting from energy efficiency and conservation efforts

The following factors must be addressed to ensure that LNG does not itself become a contributor to GHG emissions:

1. Economics of Infrastructure: Coal and subsequently LNG assets must be retired prior to the end of their lifecycles in order for a transition to a more sustainable fuel. Investors

must still be incentivised to build these assets and then retire them before they are fully used.

2. LNG's Global Warming Potential (GWP): While LNG burns cleaner than coal it has four times the GWP of coal in the short term (20 years). The amount of methane released in the atmosphere during the LNG lifecycle has the potential to have a catastrophic effect on global warming in the short term. CO2 however, has a pronounced impact on warming over a longer period of time (100 years)

Key considerations and Analysis:

While government policy and carbon taxes can help to create strategies for climate change mitigation, the authors gloss over the economic players. The private sector has a large impact on the development on the LNG sector, what incentives would be needed to induce private industry to take on an investment in projects that will not be providing them the full return on their investment?

Can coal plants be retrofitted to burn natural gas? Natural gas is 95% methane and biogas is 50-75% methane- can coal plants be transitioned into becoming digesters that would go from burning coal to natural gas to biogas? Providing private investors with incentives such as preferential bidding for these facilities, faster depreciation of assets, tax incentives and subsidies or even offsets on their GHG emission targets, could facilitate their voluntary transition from coal to biogas. Finding alternative industries for assets that have an economic life may provide a more cooperative environment in which private sector and public sector can work to transition fuels.

The reality of using LNG as a bridge fuel is highly questionable, not due to the technical nature of the problem but rather the political. Creating an industry around LNG would develop a new set of players motivated towards using LNG. Shifting momentum from LNG to then another source of renewable energy would require a concerted effort. In the current political climate, where the resistance to take the step from acknowledging climate change to acting on climate change is proving to be an uphill struggle, increasing the number of steps to a sustainable future will increase complexity- which may itself have unforeseen political ramifications such as a new stronger industry lobby and new economic players incented to continue using LNG.

Questions and Discussion Topics:

1. How can private and public sector co-operate to facilitate the transition from Coal to renewable energy?
2. What tools and mechanisms can the government use to promote investment in LNG as a transition to renewable energy?
3. Given the uncertainty in international commitment to reducing GHG emissions, is it realistic to believe that an international effort can be made to go from Coal to Natural Gas to renewable?