



**WORLD ENERGY COUNCIL
COMMITTEE ON CLEANER FOSSIL FUEL SYSTEMS**

**Meeting in Dubai
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**LNG: THE KEY FUEL IN A
SUSTAINABLE GLOBAL
ENERGY SYSTEM**

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The Role of Natural Gas and LNG in a Sustainable Global Energy System

1. A sustainable global energy system must provide clean energy for consumers and must do so with security and reliability.
2. Natural gas offers the lowest greenhouse gas emissions of any fossil fuel.¹
3. Natural gas is the key fuel in progressing to a sustainable global energy system, meeting the growing global demand for clean energy.²
4. LNG provides the most cost-effective means of exporting low-emissions energy to energy-hungry economies, in accordance with UNFCCC principles.³
5. Natural gas is the key not only to addressing the global climate change problem but to alleviating the energy security concerns of importing countries.
6. That is not all – natural gas is not just a "transitional fuel" – it has a pivotal long-term role as the balancing and backup fuel in power generation systems that use intermittent renewable energy such as wind and solar energy.
7. The world has abundant reserves of natural gas for this purpose, enough for around 60 years based on current production levels.⁴
8. LNG is an existing technology, unlike possible future technological solutions, such as carbon capture and storage (CCS).

¹ "...natural gas offers the lowest GHG emissions of any fossil fuel and the acceleration of cross-border natural gas trade is a key strategy in making progress towards sustainability of the global economy and the global environment," APEC Energy Working Group, "Great Expectations: Cross-Border Natural Gas Trade in APEC Economies", Report by ResourcesLaw International, APEC Secretariat, Singapore, November 2004.

² "The growing globalization of natural gas trade is unmatched in potential to erect the three pillars of sustainability in terms of social, economic and environmental advancement and eradicate the plagues of poverty and pollution. LNG is the thread that can cross the seas, reconnect the tectonic plates and deliver the promise of natural gas. Natural gas is no longer the fuel of the future, but rather the fuel of the present given the need for clean and efficient supplies to meet energy and environmental targets", David Sweet, "The LNG Renaissance – Delivering Sustainability from Global Gas to Local Distribution", 19th World Energy Congress, Sydney, Australia, 2004.

³ It is a principle of the UN Framework Convention that "... policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost," UN Framework Convention on Climate Change, Article 3.

⁴ BP Statistical Review of World Energy, 2008.

How LNG is Supplied

9. In 1964, Algeria became the world's first LNG exporter and the United Kingdom became the first LNG importer. However, the full potential of LNG as a clean energy source is only just beginning to be realised around the world.
10. LNG is a long-distance transportation system for exporting natural gas resources that would otherwise remain stranded. It is not a product like LPG (which is a product of petroleum refining and has different uses).
11. LNG and pipelines are alternative transportation systems for natural gas but, where overseas markets and long distances are involved, it is uneconomic to transport natural gas to those markets unless it is liquefied for shipment by LNG tankers.
12. Liquefaction is not a chemical process; it is a capital-intensive⁵, refrigeration process. When condensed by cooling into a liquid at minus 261°C, LNG occupies only 1/600th the volume of its gaseous state. Shortly after it reaches its destination, LNG is reconverted into its naturally gaseous state. LNG only "exists" in its liquefied state for about one month before being regasified.
13. Although the liquefaction and transportation stages of the LNG cycle are emissions-intensive, the emissions saved in importing countries by displacing coal with natural gas in power generation can be up to nine times the emissions generated in the liquefaction and shipping stages, depending on the fuel mix used in the importing country. These potential savings highlight the importance of maintaining a level global playing field for trade in LNG and accelerating the expansion of the LNG industry.

How LNG Trade is Conducted

14. Most LNG is sold under long-term contracts, typically 15 – 25 years, with fixed volumes and prices that may be adjusted for shifts in the prices of oil or competing fuels.
15. The LNG export industry is commercially quite complex due to the scale of projects, the need for extensive infrastructure, including ports, and the need to dovetail the development of new projects with the development of gas-fired power stations.⁶
16. The LNG export industry stands in marked contrast to all other trade-exposed, energy-intensive (TEEI) industries. The liquefaction process adds to supply costs – it does not add any value to the commodity itself, except of course its environmental value.

⁵ LNG plant construction costs have risen dramatically over the last several years. The capital cost of Woodside's Pluto LNG plant currently under construction in Australia is around A\$12 billion.

⁶ Most buyers of LNG are energy utilities that need to make 40-50 year, multi-billion dollar decisions to invest in gas-fired power stations, instead of coal or nuclear, before entering into long-term gas purchase agreements.

Current Risks Facing LNG Trade and Investment

17. The development of large-scale LNG projects has never been straightforward but is likely to become much more difficult if global energy prices stay at their presently depressed levels.⁷ The 2006-2008 surge in global oil prices did not result in windfall profits for LNG exporters as it did for oil or coal exporters.
18. The imposition of a carbon cost on LNG production in any exporting country will erect a barrier to the reduction of emissions at global level.
19. LNG exports are especially vulnerable to carbon cost exposure because existing LNG projects are subject to long-term contract prices and because the development of new projects tends to occupy the best part of a decade from the time they are submitted into the approval process.
20. At present, importers of LNG are "free riders" so far as emission reduction benefits are concerned.⁸
21. The imposition of a carbon cost on LNG production in a single country will cause "carbon leakage" if, for no environmental benefit, it leads to production relocating to another country that does not impose a carbon cost.⁹ Carbon leakage will drive investors elsewhere.¹⁰ It will distort trade and investment patterns.
22. Because the process of liquefying natural gas for export is more emissions-intensive than coal mining, any application of a carbon cost to LNG exports would advantage coal relative to LNG – which would be especially perverse from a global greenhouse emissions reduction point of view.¹¹

⁷ "The development of LNG projects in Australia is in danger of faltering because their scale, their escalating cost, their technical complexity and their complex commercial characteristics, particularly their vital dependence on pre-agreed long-term contracts and their vulnerability to completion risk and completion delays, make them easy prey...", Robert Pritchard, "How to Facilitate or Strangle an LNG Project", APPEA Conference, Adelaide, April 2007.

⁸ "Although there is still uncertainty about how carbon intensities will eventually be reduced and valued, producers of natural gas should endeavour to extract full value for its clean burning attributes. This is not presently occurring where LNG producers are "cleaning up" LNG prior to export and suffering the "carbon penalty" domestically. It will become necessary for energy buyers to recognise the value of the "fossil fuel of choice" and to share any future windfall gains from GHG emission reductions with the resource owner", APEC Energy Working Group, note 1 above.

⁹ It is acknowledged that this cannot be empirically proven due to its counterfactual nature (i.e., what would have happened in the absence of the cost).

¹⁰ As the Australian Minister for Climate Change said on 6 February 2008, "... The introduction of a carbon price ahead of effective international action can lead to perverse incentives for such industries to relocate or source production offshore. There is no point in imposing a carbon price domestically which result in emissions and production transferring internationally for no environmental gain."

¹¹ As the policy of the Australian Labor Party states, "there is no global environmental benefit to simply shutting down LNG plants only to have new plants open up in other countries which may have inferior environmental protection standards and higher emissions intensities."

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23. Although domestic cap-and-trade schemes are intended to reduce a country's domestic emissions, they will impede the objective of reducing global emissions and will risk carbon leakage, unless the burden they impose on LNG exporters can be offset.¹²

What Must Be Done to Underwrite a Sustainable Global Energy System?

24. Accelerating the development and export of LNG will open up the pathway to a sustainable global energy system and underwrite a clean energy future.
25. The development of new LNG projects will require importing countries to recognise the value that LNG brings to global emissions reduction by returning to the exporting countries a sufficient share of international carbon credits or other compensation for the emissions produced during the liquefaction and transportation stages.
26. With the development of additional production projects, LNG exporters will be able to increase the export of emission reductions to other countries, making a substantial, long-term contribution to addressing both global climate change and energy security problems.
27. Natural gas also has a pivotal long-term role as the balancing and backup fuel for intermittent renewable energy in power generation systems.
28. It is therefore bad policy if domestic cap-and-trade schemes impose a cost burden on LNG exporters that is not internationally uniform.

Robert Pritchard
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¹² According to European Commission MEMO/08/35, 23 January 2008, "In other sectors [than the power sector], allocations for free will be phased out progressively from 2013, resulting in no free allocation in 2020. However, an exception will be made for installations in sectors judged to be at significant risk of 'carbon leakage', meaning that they could be forced by international competitive pressures to relocate production to countries outside the EU that did not impose comparable constraints on emissions. This would simply increase global emissions without any environmental benefit."