

16 November – 2022

Energy Dialogue

Natural Gas – Does
It Have A Role In The
Energy Transition?



COP27
SHARM EL-SHEIKH
2022 EGYPT



The Al-Attiyah Foundation is proudly supported by:



AGENDA

Wednesday 16th
November 2022

13:00	PM	Welcome and Opening
13:05	PM	Special Guest Speakers
13:10	PM	Moderated Panel Discussion
13:35	PM	Q & A from the Audience
13:40	PM	Closing Comments



The Abdullah Bin Hamad Al-Attiyah International Foundation for Energy and Sustainable Development is a non-profit think tank that provides robust knowledge and insights on Global Energy and Sustainable Development topics.

Through a series of Energy Dialogues, The Foundation provide a platform for knowledge exchange and support for the global community in the quest towards a sustainable energy future.

All guests have the opportunity to share their opinions and insights in what is always a lively and thought-provoking discussion.



ASSESSING THE ROLE OF NATURAL GAS IN THE ENERGY TRANSITION

The versatility of natural gas is one key to its expected prominent role in the energy transition, serving as an energy source for all sectors. Natural gas has a significant advantage over coal and oil, emitting about half the CO₂. The role of natural gas in the energy transition will be discussed in a moderated panel discussion.

The Foundation has invited four leading experts to discuss the crucial role of Natural Gas in the energy transition. The event will explore the role that Natural Gas will play in the run up, from the present time to 2050, as more and more countries and private companies commit to Net-Zero targets.

Natural Gas has demonstrated its versatility in many regions and for many uses. In this context, this information note seeks to conceptualize how the versatility could be demonstrated and utilized in the ongoing efforts to reduce greenhouse gas emissions.

The main usages of natural gas have been threefold:

1. Gas as a fuel for power generation;
2. As a fuel for domestic cooking and for space heating; and
3. For a plethora of industrial usages but specifically for high temperature heat and the production of fertilizers via the production of ammonia.

It should be noted that growth in the use of Natural Gas has been driven primarily by prices, convenience, low capital costs and its consideration as a clean fuel. The arguments about its use because it is a lower emitter of

carbon dioxide is beginning to gain traction, particularly its potential to compliment renewables. It is important to recognize, however, that global statistics of energy usage by type, are the summation of a series of local decisions. It could be argued that it is on the basis of local decisions, driven by economics and by laws in some countries, that Natural Gas has shown its versatility. By and large, changes in energy usage will be generally based on local economic decisions unless driven by countryside legislation.

In this context, the information note examines the use of natural gas in the above main three usage areas and discusses how natural gas may influence the energy transition.



ELECTRICITY GENERATION

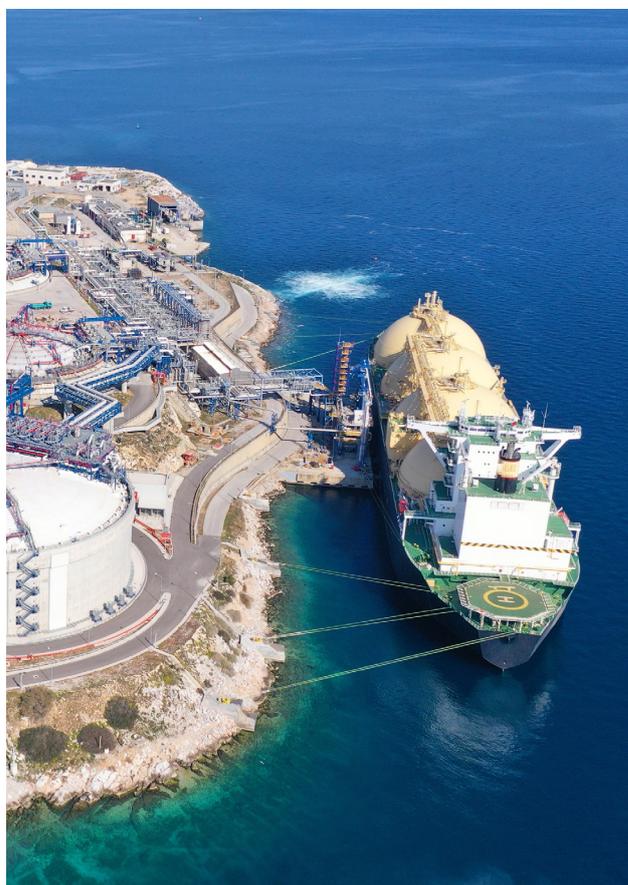
The move away from coal has been underway for decades in many countries that has the choice based on the relative costs of coal and natural gas. This has been based on fuel cost, relative capital costs and the time to build such plants. Typically, combined cycle gas (CCG) plants have been built on the sites of old coal plant but near gas mains so that existing infrastructure is used. The impetus has been driven by CCG plants emitting significantly less carbon dioxide and having a higher thermal efficiency than coal plants. CCG plants also significantly have lower emissions, in terms of other harmful pollutants, as natural gas contains less sulphur and nitrogen compounds than coal.

CCG plants have a significant advantage over nuclear, hydro, solar and wind in that they are flexible and so startups and ramping up are relatively quick. It is much easier to ramp up a CCG plant by combining several gas turbines with several steam turbines. The use of CCG plants as "running reserves" is common placed. The nature of CCG plants makes them ideal for the generation of the so called "ancillary services". These are generation services which are needed for grid stabilization uses. E.g. the production of mega vars and the regulation of frequency and voltage to combat induction effects.

Electricity plants, of whatever fuel, are probably the best examples of where to install carbon capture. The carbon dioxide generated from electricity plants are usually concentrated in the post combustion phase of burning, making carbon capture feasible.

However, the number of such plants utilizing carbon capture worldwide, is still relatively small, only in the tens of thousands.

Much has been written about the problems of methane emissions in producing and using natural gas. However, coal mines also produce methane in significant amounts, hence the numerous studies and projects on coal bed methane extraction. So, the transition from coal to natural gas for electricity generation appears to have significant impetus. Also, it should be noted that coal generation plant has an economic life of over 45 years. Therefore, any coal plant being built now will not be redundant until well into the later part of this century, when the world should have transition well into clean energy, it is to have any chance of achieving the goal of the Paris Agreement.



SPACE HEATING AND DOMESTIC COOKING

Here natural gas has also replaced coal purely on economic grounds, where it is possible. The times when every town in western countries, produced "town gas" by coal gasification is over. We no longer see "gasometers" in many western cities. Legislation and economics may drive the demand toward electricity but certainly away from coal. It is important to note however, that many regions of the world are only now slowly moving away from dung and wood, towards more healthier LPG. While LPG is itself a fossil fuel, it is considered not to pollute as much wood or dung. Also, these developing countries that are still reliance on wood and dung, are not large emitters of carbon dioxide, so the impact on global GHG emissions is relatively small.

INDUSTRIAL USES OF NATURAL GAS

Industrial uses of natural gas could be classified into two main categories:

1. Use as a high temperature heat source; and
2. Use as a feed stock.

The high temperature uses include the production of steel, concrete and smelting of most metals. Here coal is gradually being replaced by natural gas and it is expected that this trend would continue, resulting in more economic and GHG emissions reduction benefits. It should be noted that carbon dioxide is part of the chemical process to set concrete and so part of the emissions for concrete cannot be replaced unless new forms of concrete are developed. Steel manufacture can take place using hydrogen and indeed for certain uses a direct reduction of steel by hydrogen is practiced already now. However, if hydrogen is not "green" or "blue" (i.e. emission free), then no emission reduction is achieved, through its use.

Natural gas as a feedstock is used for a wide variety of purposes. Perhaps the most important is that of producing ammonia for fertilizers. However, ammonia and perhaps methanol are now being looked at as a transportation fuel or as a means of transporting hydrogen. So natural gas via ammonia could displace diesel as a marine transportation fuel and also as a means to transport hydrogen which would have been produced from natural gas, associated with significant carbon emissions.

In summary natural gas could be seen to be already on a transition path away from coal and possess many ongoing advantages in doing so. This makes it an attractive option for stabilizing the path to renewables while reducing carbon emissions in the short term. In the longer term natural gas will have a reduced but still significant role as a feedstock or for the production of hydrogen. However, the process would appear to be slow as local economics will prevail unless the transition is hastened by national and international legislation.



OVERALL OBJECTIVES

- To discuss the role of Natural gas in aiding the Energy Transition to a less fossil fuel reliant world;
- To identify the role that Natural Gas can play in reducing emissions by addressing local situations;
- To discuss the timetable needed to bring about Net Zero Carbon emissions by 2050;
- To discuss the dangers of not achieving Net Zero Emissions by 2050 and the progress made to date;
- To consider what was relevant in COP 27 in terms of Natural Gas, within the overall objectives of this COP.

DISCUSSION POINTS

During this event, the speakers will discuss the role of natural gas in relation to the Energy Transition to a low carbon emitting economy. It is expected that the speakers would also discuss the further ongoing role of natural gas beyond the energy transition period.

- Given that gas fired power station are more efficient than coal fired ones, how is the move away from coal going, seeing that some major economies are still building new coal fired power stations?
- Will the demand for energy inevitably rise giving the twin vectors of increasing populations and the need to improve lives by increasing energy usage per capita?

- Energy efficiency is often claimed to be the best way to curb emissions. However, it is often achieved by shifting heavy industry to developing countries. How can gains in energy efficiency be optimized?
- We hear about tipping points where the effects of climate change become irreversible. What are the key signs of tipping points to watch for? And can natural gas play any role in avoiding them?



KEY QUESTIONS

01. Which is more important in the medium term, energy security or progress in reducing Carbon dioxide emissions? Should this even be a tradeoff?
02. What are the likely sources for coping with shortage of Natural Gas in the summer of 2023, Where will the world find the gas to restock storage facilities in readiness for the winter of 2023/24? Are gas stocks able to cope with a severe northern hemisphere winter?
03. Is natural gas competitive with wind and solar power on a life cycle basis?
04. Is natural gas set for a decline in the near future due to competition from renewable energy sources?
05. Can decarbonisation of natural gas be achieved in power stations economically?
06. Is there a future for natural gas as a chemical feedstock e.g. in fertilizer production?
07. Can natural gas be replaced in domestic cooking and space heating by electricity?
08. Can hydrogen replace natural gas for high temperature industrial uses?
09. Can natural gas overcome all the methane emission problems?
10. Given that LNG produces many times more emissions than pipeline gas, will the advantages of pipeline gas sway demand from LNG in the medium term?
11. Why is gas pricing becoming more volatile?
12. How would cross border taxes impact on the role of natural gas?

WEBINAR SPEAKERS

Moderator:



Mr. Axel Threlfall,
Editor at Large, Reuters.

Speaker



Dr. Chris Gentle,
Senior Advisor,
Partnerships and New
Ventures at the World
Energy Council.

Speaker



Lorna Ritchie,
Director, Global Counsel.

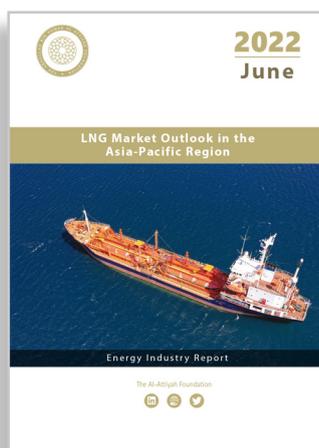
Speaker



Nathan Cooper,
Strategic Climate
Partnerships Global
Lead, World Economic
Forum.

FURTHER BACKGROUND READING AND VIDEO MATERIALS

For more information on the future of gas prices and supply, you may refer to the following:



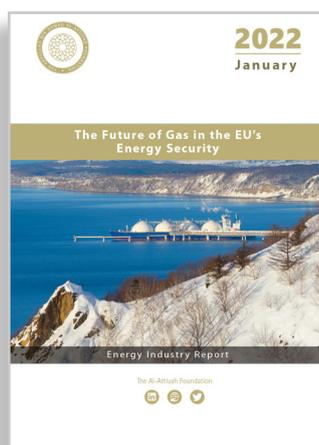
June – 2022

LNG Market Outlook in the Asia-Pacific Region

Global LNG prices surged to never-beforewitnessed heights in 2022, as market tightness and concern over supply gripped the market. The interconnectedness of gas markets in Europe and Asia-Pacific through LNG trade has resulted in the European benchmark, Dutch TTF, topping US\$ 60 / MMBtu in 4Q 2021 while the spot Asian LNG benchmark, JKM, hit nearly US\$ 60 / MMBtu in March 2022.



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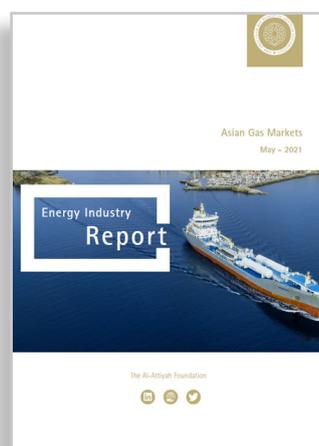
January – 2022

The Future of Gas in the EU's Energy Security

The European Union is currently seeing gas shortages and high prices, with declining domestic production and concerns over its relationship with Russia. Gas is also required as coal is being phased down. European countries vary in their attitudes to gas depending on domestic politics, resource position and energy mix.



(QRCO.DE)



May – 2021

Asian Gas Markets

Asia-Pacific is emerging as the key area for global gas demand growth, consuming 60% more gas than Europe. Yet the level of interconnectivity is low, and there are wide disparities in gas use, infrastructure and regulation.



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ABOUT THE FOUNDATION

The Abdullah bin Hamad Al-Attiyah International Foundation for Energy and Sustainable Development is a non-profit think tank inaugurated by His Highness the Father Emir, Sheikh Hamad Bin Khalifa Al Thani, in 2015. The Foundation works closely with its members, academia, and a wide network of international experts, to provide independent insights, in-depth-research and informed debate on critical energy and sustainable development topics.

Mission: To provide robust and practical knowledge and insights on global energy and sustainable development topics and communicate these for the benefit of the Foundation's members and the community.

Vision: To be an internationally respected independent think tank that is a thought leader focused on global energy and sustainable development topics.

Research Reports & Publications

- Daily News Flash
- Weekly Energy Market Review
- Monthly Energy Research Report
- Monthly Sustainability Research Report
- Monthly News Articles
- Special Industry Reports
- Webinar Whitepapers
- CEO Roundtable Whitepapers
- Annual Sustainable Development Book

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- Bi-monthly Podcast Interviews
- Monthly Energy Educational Video
- Monthly Sustainability Educational Video
- Monthly Webinars
- Annual High-Profile Webinar

Events & Activities

- The Al-Attiyah International Energy Awards
- Quarterly Energy Dialogues
- Qatar Sustainability Week
- The ICP Bosphorus Summit

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OUR PARTNERS

The Al-Attiyah Foundation collaborates with its partners on various projects and research within the themes of energy and sustainable development.





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