



# GECF

Gas Exporting Countries Forum  
Gas Market Analysis Department

## GECF ANNUAL SHORT TERM GAS MARKET REPORT - 2020

Gas Market Response to Turbulence:  
Resilience, Reliability & Lessons Learnt





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## ACKNOWLEDGEMENTS

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Under the leadership of HE Secretary General, Yury P. Sentyurin such efforts have led to the first edition of the annual short-term gas market report in its full form.

The Secretariat is thankful for the efforts of all the above contributors, Legal Officer (Sayyedhassan Mousavi) both directly and indirectly. Special thanks for the support of Secretary General Office (SGO), Legal Officer and the Data and Information Services Department (DISD).

### Project Leader

Mahdjouba Belaifa, Head of GMAD

### Experts Team

- Mahdjouba Belaifa, Head of GMAD
- Rafik Amara, Senior Gas Market Analyst, GMAD
- Adrian Sookhan, Gas Market Analyst, GMAD
- Kamran Niki Oskoui, Market Research Analyst, GMAD
- Aydar Shakirov, Gas Transportation and Storage Analyst, GMAD
- Amin Shokri, Energy Analyst, GMAD
- Sandy Singh, Research Assistant, GMAD

### Administrative Support

Hadia Bendeddouche, Secretary, GMAD

### Peer Review Support

Stuart Elliott, Senior Writer, S&P Global Platts

### GECF Technical and Economic Council (as of November 22, 2020)

- Algeria - Mohamed Nassim Hallal
- Bolivia - Marcelo Gabriel Velasquez Bilbao la Vieja
- Egypt - Eng. Yaseen Mohamed Yaseen
- Equatorial Guinea - Antimo Asumu Obama
- Iran - Afshin Javan
- Libya - Abdel Karim Alhaderi
- Nigeria - Bala Wunti
- Qatar - Jabor Yaser Al-Mesalam
- Russia - Denis Leonov
- Trinidad and Tobago - Selwyn Lashley
- Venezuela - José Agustín Ruiz

## FOREWORD

We are delighted to present the first edition of the GECF Annual Short-Term Gas Market Report 2020, which adds to a raft of flagship publications of the GECF Secretariat. Our aim is for it to become a reference for short-term views and analysis of the global gas and LNG markets, alongside the GECF Global Gas Outlook, which provides the longer-term view on the gas market.



The publication of this report coincides with the still unfolding situation around COVID-19, an invisible virus that led to a significant slowdown in global activities with no distinction between economies and races. The pandemic is expected to leave its mark on 2020 and 2021 before allowing the expected recovery to pre-COVID-19 levels. In this context, we have chosen the title of this year's edition: *"Gas Market Response to Turbulence: Resilience, Reliability & Lessons Learnt."*

Throughout the report, the GECF shares its independent assessment on the gas market with the main outcomes of the years 2019 and 2020, as well as the short-term prospects for the full year 2020 and 2021.

The GECF Annual Short-Term Gas Market Report 2020 sheds light on different aspects of the gas market, firstly with an overview of the main risks and challenges that the gas industry is facing today, with an analysis of the influencing factors and the critical areas for the gas industry as a whole, and for GECF Member Countries in particular. Secondly, the report provides a comprehensive analysis of the developments in the gas and LNG industry over the past two years, with a special focus on 2020 and the impact of COVID-19 on the industry. Furthermore, it highlights the short-term outlook and identifies potential opportunities and challenges that should be considered by gas producers. The topics covered include global economy and energy policy developments, natural gas consumption and supply, trade and gas prices. The combination of these factors defines the evolving architecture of the gas market.

The report highlights that the gas industry continued to expand at a healthy pace in 2019 both in terms of supply and demand, though the expansion was slower compared to 2018. Prior to the COVID-19 pandemic, an apparent oversupply in the LNG market resulted in the erosion of global spot natural gas and LNG prices. As the world entered 2020, the gas industry was hit by a perfect storm, which was created by a combination of a mild winter season, an oversupplied LNG market and the COVID-19 pandemic. Most countries across the world implemented strict lockdown measures, which saw energy demand plunge across all major gas consuming regions. This resulted in oil and natural gas prices spiralling out of control to unprecedented lows. In comparison to other fossil fuels, natural gas demand appears to have been less impacted by the pandemic.

Amidst the weakened natural gas demand and low prices, some natural gas producers were forced to lower their production. The lower natural gas prices translated into reduced revenues for NOCs and IOCs, which in turn resulted in a shrinkage of revenues for gas exporting countries. The lower revenue streams forced many NOCs and IOCs to postpone or even cancel investment in the oil and gas industry, which could lead to an imbalance between natural gas supply and demand in the future. Although natural gas prices have been depressed for most of 2020, we are witnessing signs of recovery, supported by a warmer-than-usual summer season in North America and Europe, as well as



resurgent winter storage demand, particularly in Asia. Looking ahead to 2021, we expect a recovery in the natural gas industry as the world returns to some form of normality following the COVID-19 pandemic.

The world has never needed to be united as much as it does now. It has to cooperate and collaborate on the essentials to overcome the common challenges, develop common and differentiated resilient mechanisms, and ensure its prosperity equally on a win-win basis. Today, the common wisdom is that the world is facing considerable challenges of a diverse nature: geopolitics, economic recession, health threats, unbalanced markets, security of supply and demand, digital transition, and the formation of a low-carbon economy.

The GECF, by publishing this report under the title mentioned above, draws the attention of all market stakeholders to the need for dialogue, cooperation, and collaboration to establish a resilient roadmap based on the lessons learnt from the losses incurred by the gas industry. The GECF is an instrumental platform to share the challenges of the gas industry and identify the opportunities for a greater value of natural gas and fair access to natural gas for all.

I would like to express my sincerest appreciation to all contributors of the first edition of the GECF Annual Short-Term Gas Market Report.

I cordially invite you to explore the report.

Yury P. Sentyurin  
Secretary General  
Gas Exporting Countries Forum



## ABOUT GAS EXPORTING COUNTRIES FORUM (GECF)

The Gas Exporting Countries Forum (GECF) is an international governmental organization, which provides the framework for exchanging experiences and information among Member Countries. GECF is a gathering of the world's leading gas exporting countries set up in May 2001 in Tehran, Iran. Its structural framework was drawn up gradually to become a full-fledged organization in 2008, with the Statute and Agreement of its functioning as a Forum signed in Moscow, Russia.

The GECF Secretariat, a permanent organ of the Forum, was formally established in 2009, with its Headquarters based in Doha, Qatar. The Secretariat is an important platform that supports Member Countries' objectives to increase the level of communication, coordination and strengthen collaboration as they move towards achieving the strategic objectives that they have agreed upon in the Long-Term Strategy as set forth in the 19th Ministerial Meeting Resolution around the core value of cooperation.

The Secretariat is carrying out its activities in accordance with the Statute of the Forum and under the guidance of its governing bodies. Such governance is enshrined in the Long-Term Strategy of the Forum that stipulates the objectives that are generally recalled as below: Objective No. 1: Maximizing gas value, namely to pursue opportunities that support the sustainable maximization of the added value of gas in light of the market conditions and all other pertinent circumstances. Objective No. 2: Developing the GECF stance on gas market developments through short, medium, and long-term market analysis, projection and forecasting. Objective No. 3: To bring about active cooperation, i.e. to develop effective ways and means for positive and fruitful cooperation amongst GECF Members. Objective No. 4: Promotion of natural gas, namely to contribute to meeting future world energy needs, to ensure sustainable global development and to meet the increasing environmental concerns, in particular with regard to climate change. Objective No. 5: International position and status of the GECF as a globally recognized intergovernmental organization and a major player in the field.

Furthermore, the Forum agreed on strategic goals of allowing GECF Member Countries to cooperate on strategic areas for common projects of interest including, inter alia: 1. To promote natural gas as the fuel of choice in the global market; 2. To provide support for Member Countries in analyzing and forecasting present and future natural gas market developments, with the objective of becoming a reference in natural gas outlook, and to keep Member Countries informed, updated and prepared to address the challenges ahead and benefit from the opportunities that may arise in the future; 3. To develop a shared understanding of market conditions in order to establish common views and positions on global gas market development and to promote them internationally; 4. To provide a framework for dialogue and co-operation amongst GECF Member Countries.

One of the instruments to achieve the above-mentioned objectives is the Annual Short-Term Gas Market Report, which is the outcome of the research work undertaken by the Gas Market Analysis Department of the GECF Secretariat over the course of a whole year. This report provides an understanding of the drivers of the dynamics occurring in gas market, a short-term outlook, as well as some recommendations for cooperation in line with the core values of the GECF Long-Term Strategy, for the consideration of GECF Member Countries. In accordance with the GECF Statute, the organization also aims at supporting and preserving the sovereign rights of its Member Countries over their natural gas resources and their abilities to develop, preserve and use such resources for the

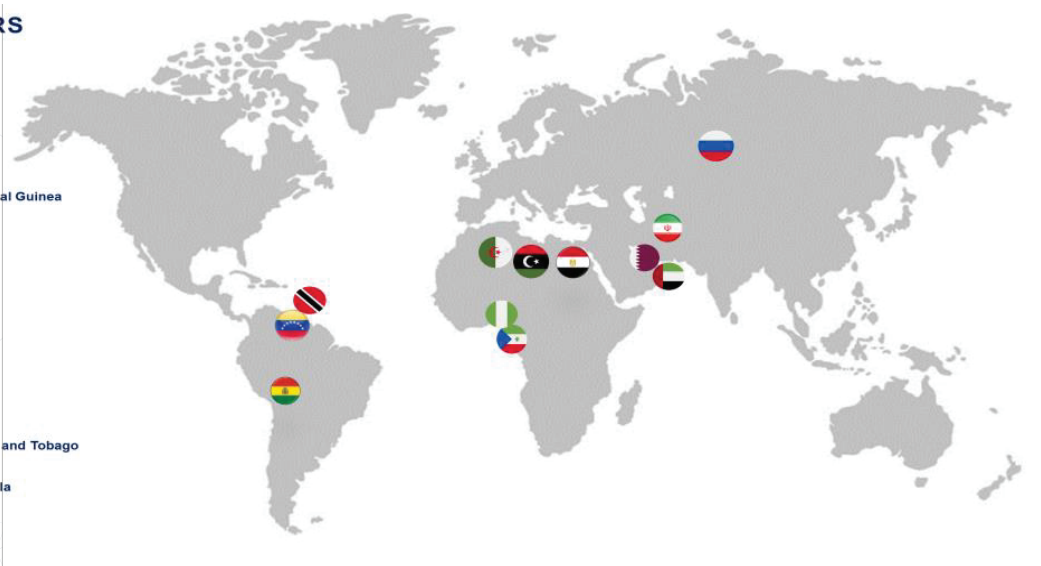


benefit of their people. As of today, the GECF comprises twenty Member Countries, out of which eleven (11) are full Members, namely Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Libya, Nigeria, Qatar, Russia, Trinidad and Tobago, and Venezuela; and nine (9) Observer Members countries, namely Angola, Azerbaijan, Iraq, Kazakhstan, Malaysia, Norway, Oman, Peru and United Arab Emirates. The Forum welcomes any country producing and exporting natural gas that shares the same principles stipulated in the GECF Statute to join the GECF family of leading gas exporting countries, and benefit from the experience and expertise of this organization. With its current membership composition, the GECF accounts for more than 70% of the world's proven gas reserves and contributes more than two-thirds of global gas trade (both by pipeline and in LNG form), which shows the prominent role of GECF on the global gas market.

### GECF Member and Observer Countries

#### MEMBERS

-  Algeria
-  Bolivia
-  Egypt
-  Equatorial Guinea
-  Iran
-  Libya
-  Nigeria
-  Qatar
-  Russia
-  Trinidad and Tobago
-  Venezuela



#### OBSERVERS

-  Angola
-  Azerbaijan
-  Iraq
-  Kazakhstan
-  Malaysia
-  Norway
-  Oman
-  Peru
-  United Arab Emirates

KEY GECF FIGURES (*)	
	Global Share
Proven Gas Reserves	71%
Marketed Gas Production	45%
Pipeline Gas Exports	53%
LNG Exports	60%

(\*) Including Malaysia, which joined GECF in 2019.

## GECF: A Prominent Organization of Leading Gas Exporting Countries:

- Resilience
- Long-term expertise in gas industry
- Solid long-term partnerships
- Good history in gas industry
- Strong role in energy security of the world in case of shortage of gas supplies and/or demand peaks
- Proven know-how and commitment of GECF Countries to serve their clients/partners.

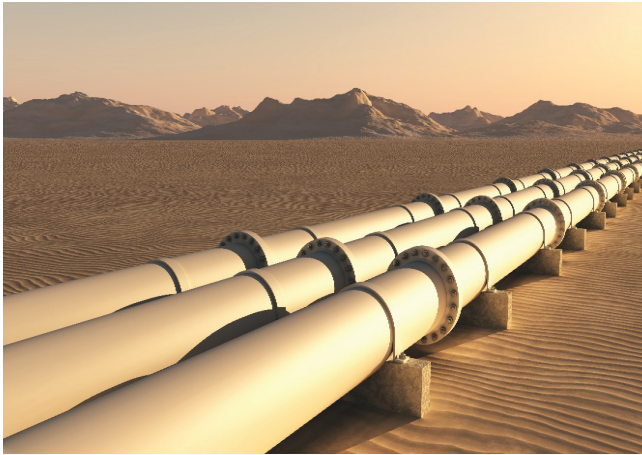
## UPSTREAM



## DOWNSTREAM



## TRADE



## MARKET & PRICES



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# 01

## EXECUTIVE SUMMARY





## 1 EXECUTIVE SUMMARY

There is no doubt that the gas market is witnessing unprecedented changes led by LNG trade, production of unconventional oil and gas resources, changes in consumer behaviour, diversification of gas pricing mechanisms and gas price movements to significantly lower levels. With COVID-19, the bearish trends have been amplified and 2020 witnessed the most severe global crisis that inhibited growth in most parts of the world, thus affecting the business-as-usual culture. A glance at the trends shows a situation full of uncertainties and risks that can prevent GECF Member Countries from achieving higher growth if adequate cooperative measures are not taken in due time and form. However, there are lots of opportunities that can catalyse the exports of GECF Member Countries on the global market both in LNG and pipeline gas, and in any other gas-based derivatives that Member Countries see appropriate to monetize their respective natural gas resources. This report explores the historic trends of 2018/19, an independent analysis of the market conditions and responses in 2020 thus far, while providing an informed short-term outlook for the global gas market for 2020/2021.

### GLOBAL ECONOMY

The global economy experienced strong growth in the first half of 2018. However, rising trade barriers and uncertainties regarding Brexit as well as increasing geopolitical issues negatively affected business confidence, investment activities and trade growth in the second half of the year. As a result, the pace of global expansion lost its momentum in the second half of the year and resulted in economic

growth of 3.6% in 2018, down from 3.8% in 2017.

In 2019, global economic growth continued to decelerate, even more sharply than the year before. Escalated trade tensions, in particular between the U.S. and China, have affected global trade growth.

Moreover, Brexit-related uncertainties, elevated geopolitical tensions and economic sanctions amid tight financial conditions weighed on business sentiments and weak investment growth especially in developing economies. Consequently, global GDP growth declined sharply to 2.9% in 2019.

While predominantly downside risks to the global economy have affected the expectations on global growth in 2020, the outbreak of COVID-19 in China and its rapid spread across the world has imposed unavoidable damages on the vulnerable conditions of the global economy. The pandemic has resulted in the most intensive health crisis and economic recession in recent decades. The outlook for the global economy has reversed from a fragile recovery into a sharp recession, whose depth and duration is uncertain. As of September 2020, considering the sharp decline of the global economy in the first half of 2020, with a slight recovery expected in the second half driven by easing lockdown measures and the resumption of economic activity, the GECF projects that the world economy will shrink by 4.5% in 2020.

While economic recovery started from the second half of 2020 in most major economies, the negative effects of the pandemic are expected to be huge and long-lasting. The global recovery is expected



to materialize in 2021 with economic growth of around 4.9%, slower than previously expected. Although, most countries are expecting a higher growth rate in 2021, the level of global GDP is expected to reach pre-COVID levels only in 2022.

How things will evolve after the newly elected US president takes office is still uncertain and we need to monitor the situation to see whether there are signs that the trade war between the two countries may come to an end.

## ENERGY POLICY DEVELOPMENTS

Despite the risks, there were energy policy developments in 2019 that could be beneficial for gas, particularly the policies to phase out nuclear and coal power plants in Asia and Europe. However, other policies were introduced that could negatively impact gas demand growth, such as the supporting mechanisms of other sources of energy and the postponement of targets to reduce the share of nuclear. Meanwhile, amidst the COVID-19 pandemic, countries across the globe are implementing energy policies and stimulus packages to cope with the negative impacts of the lockdowns. The supporting mechanisms include fiscal programs, tax rebates, lowering domestic energy prices for consumers, and relaxing the rules and requirements in the energy sector.

## GLOBAL NATURAL GAS CONSUMPTION

Global natural gas consumption increased by around 2.3% y-o-y in 2019 to 3.95 Tcm, but was lower than the fast growth recorded in 2017 and 2018. As in 2018, North America

and Asia Pacific accounted for the bulk of the global incremental gas consumption in 2019. The slower pace of growth was driven by a decline in consumption growth in the U.S. and China. In addition, weaker global economic growth, a mild northern hemisphere winter season and higher nuclear availability in Japan and South Korea contributed to the slowdown in consumption.

All regions except C.I.S and Latin America recorded an increase in consumption, but at a slower pace compared to 2018. Following a decline in consumption in Europe in 2018, the trend was reversed last year, mainly due to coal-to-gas switching in the power sector. At the country level, the stronger consumption was driven by the U.S., China, Australia, Iran and Canada, which offset sharp declines in Russia, Japan and Turkey. The U.S. and China maintained their leading roles in the increase in global gas consumption in 2019. The power

sector continues to be the major driver of gas demand in the U.S., supported by the retirement of coal-fired power plants. China's gas consumption slowed significantly in 2019 due to weaker economic growth, sluggish industrial activity, easing of the coal-to-gas switching policy, support for clean-coal technology in the country and lower profit margins for gas in the power sector. The industrial sector continued to account for most of the incremental gas consumption in China. Meanwhile, the drop in gas consumption in Russia was attributed to mild winter weather, which curbed gas demand for heating.

In 2020, we forecast a decline in global gas consumption of 2-3.5% due to a mild winter

season and the COVID-19 pandemic, which has cut gas demand in the power and industrial sectors. Gas consumption across all regions is expected to be negatively impacted in 2020. In Asia, gas consumption may be less impacted compared to other regions due to a quick recovery in gas demand in China, which has been a major contributor to global gas consumption growth. Colder-than-usual winter months at the end of 2020 could offset some of the lost gas demand due to a mild winter season at the beginning of the year.

For 2021, we have considered two scenarios, pessimistic and optimistic, where gas consumption could grow by 1.5-3% and 2.5-4%, respectively. Under the pessimistic outlook, we assume a mild winter season and 80% recovery in gas consumption lost due to COVID-19 restrictions. Meanwhile, for the optimistic outlook we assume a return to a normal winter conditions and 90% recovery in gas consumption lost due to COVID-19 restrictions with consumption returning to 2019 levels. For 2021, an increase in gas consumption in developing Asian countries, particularly China and India, is expected to contribute to an increase in global gas consumption.

The power sector accounted for 39% of global natural gas demand in 2019 reaching 29,906 TWh and increasing 1% y-o-y. In 2020 thus far, gas consumption in the power sector in Europe was particularly affected as there was significantly lower industrial and commercial activity. However, in the short/medium term, the share of natural gas in the power sector is expected to grow particularly in Europe and Asia as it gains momentum in existing markets and penetrates emerging markets. The full

impact will ultimately depend on how long the pandemic lasts and the measures governments put in place for economic recovery.

The transportation sector, mainly automotive and shipping industries, has been emerging as a new major consumer of natural gas. In the short term, consistent growth in the sales of natural gas vehicles and a robust increase in demand for LNG as a bunker fuel might be expected.

## GLOBAL NATURAL GAS SUPPLY

Global natural gas production in 2019 rose by 3.5%, to stand at ~4 Tcm, which is around 136 Bcm higher than in 2018. The increase in global production in 2019 was driven by the U.S., Australia, China, Iran, Russia, and Egypt, supported by growing pipeline gas and LNG exports, as well as domestic gas consumption, which pointed to the need for further development of new gas fields. Meanwhile, the COVID-19 pandemic has negatively affected projections for natural gas production in 2020. Like other sectors, the COVID-19 pandemic affects oil and gas upstream activities.

## TRADE

### GLOBAL PIPELINE GAS TRADE

Global pipeline gas trade, based on the net flows approach, declined by 4.3% to 546 Bcm in 2019. In terms of net pipeline gas imports, Europe was the leader with 61% of the market, while Asia Pacific and North America represented 13% and 10% of the market, respectively.

European net pipeline gas imports fell by 6% to 332 Bcm in 2019, mainly driven by much



higher LNG imports. Against the backdrop of the pandemic, extra-E.U. pipeline gas imports fell in the first 10 months of 2020 by 16% y-o-y to 216 Bcm, with GECF Member Countries accounting for 100% of supply.

North American net pipeline gas imports decreased by 5% to 53 Bcm in 2019, with the U.S. becoming a net exporter of pipeline gas. Asia Pacific net pipeline gas imports dropped by 3% to 73 Bcm, with China's imports stagnating at 50 Bcm. Latin American net pipeline gas imports declined by 19% to 13 Bcm, with Bolivia remaining a leader in regional exports.

### *GLOBAL LNG TRADE*

In 2019, global LNG trade continued to grow strongly driven by the significant increase in European LNG demand. Total LNG trade amounted to 354.1 Mt, representing growth of almost 11.7% compared to 2018. LNG demand in Asia grew by 2.8% to 246.7 Mt in 2019. Weak LNG demand growth in Asia pushed excess LNG supply towards European markets during 2019. Therefore, competitive LNG prices at the major liquid hubs in Europe became more attractive in 2019. Considerable growth of European LNG demand resulted in LNG imports of 84.9 Mt in 2019, almost 68% (34.2 Mt) higher than 2018. However, LNG demand in the MENA region declined by 25% to 7.2 Mt in 2019 almost 2.4 Mt less than a year before. LNG imports into Latin America stood at 14.5 Mt in 2019, about 0.68 Mt less than 2018.

In terms of spot and short-term LNG trade, it accounted for 34% of global LNG trade in 2019, up from 31% in 2018. The higher share was driven by the increasing flexible LNG volumes from the U.S. and an uptick in LNG volumes traded by traders and portfolio players. In the short-term, spot and short-term LNG trade is expected to increase further, supported mainly by low spot LNG prices and increasing flexible volumes from the U.S.

The year 2020 saw the outbreak of COVID-19, which affected the pace of global LNG trade growth. In the first 9 months of 2020, global LNG demand was resilient despite the sharp contraction of economic activity during this period. However, the pace of LNG trade growth lost momentum as compared with previous years. During the first 9 months of 2020, global LNG trade amounted to 268.5 Mt, representing 3% (or 8.4 Mt) growth in comparison with the same period last year. During this period, Asia imported 186.9 Mt, showing 3.2% y-o-y growth. Asia contributed 5.8 Mt to incremental demand thanks to growing LNG imports in China, India, Taiwan and Thailand, while LNG imports declined in Japan and South Korea during January-September 2020. LNG imports into Europe also increased by 8.4% y-o-y (or 5.1 Mt) reaching 65.8 Mt by the end of September 2020. However, LNG demand in Latin America declined significantly during the first 9 months of the year, falling to 8.4 Mt from 12.1 MT compared with the same period last year. LNG

imports by the MENA region stood at 6 Mt in the first three quarters of the year, slightly below 6.2 Mt imported during the same period last year. LNG trade is expected to rebound in the fourth quarter of 2020, with global LNG trade projected to grow by 3-3.5% in 2020 to reach 364-366 Mt, almost 10-12 Mt higher than a year before.

### *GLOBAL LNG SUPPLY*

In 2019, global LNG exports jumped by 12.4% y-o-y to 354 Mt, driven by higher exports from both GECF (+18 Mt) and non-GECF (+21 Mt) countries. At the country level, global LNG exports were supported by the start-up and ramp-up of LNG projects in the U.S. and the ramp-up of LNG projects in Russia and Australia, which offset a drop in exports from Indonesia.

In 2020, global LNG exports, excluding re-loads, are forecast to grow at around 2-2.5%, significantly slower than in previous years and driven by non-GECF countries. However, if re-loads are included, global LNG supply is forecast to increase by 2.5-3% this year. The weaker pace of growth is mainly driven by a loss of around 12-15 Mt in LNG supply, particularly in the U.S., compared to our pre-COVID forecast. The loss in LNG supply from the U.S. is due to the negative LNG netbacks for U.S. LNG delivered to Europe between May and September 2020. This resulted in the cancellation of around 170-180 LNG cargoes from the U.S. during this period.

Assuming that the lost LNG supply will come to the market in 2021 and considering maintenance activity at some LNG facilities, global LNG exports in 2021 could grow by 6-7%.

In terms of market share, GECF's share of global LNG exports was 60% in 2019, down from 61% in 2018, attributed to the faster growth in LNG exports from non-GECF countries, particularly Australia and the U.S. LNG supply by the GECF Member Countries and Observers reached 212 Mt in 2019, up 9.2% y-o-y. Out of the total 212 Mt of LNG exported from GECF countries last year, 60% was delivered to Asia, followed by Europe (34%), Latin America (3%), MENA (3%) and U.S. & Canada (less than 1%). In contrast, non-GECF LNG exports are less diversified with 84% landed in Asia, 10% in Europe and the remaining 6% in Latin America and the MENA region.

### *NEW LNG EXPORTING CAPACITY*

Global LNG installed capacity increased by 5.8% y-o-y in 2019 with 24 Mtpa of additional capacity, mainly from the U.S., to reach 444 Mtpa. In 2020 and 2021, 20 Mtpa and 2.4 Mtpa of new LNG capacity are expected to commence operations respectively. These projects are mainly from the U.S. and two projects from GECF Countries Russia (Yamal Train 4) and Malaysia (PFLNG 2)

In terms of the development of new LNG capacity, 2019 recorded the largest combined capacity to reach a positive



final investment decision (FID) in a single year at around 71 Mtpa. GECF countries accounted for almost 40% of the LNG projects sanctioned last year.

In 2020, the Energia Costa Azul in Mexico, with a capacity of 3.5 Mtpa, is the only project to have reached FID in 2020 thus far. For the remainder of the year, 33 Mtpa of new LNG capacity could reach FID, from the First Phase of the LNG expansion in Qatar. It should be noted that due to the low oil and gas prices and the COVID-19 pandemic, FIDs of around 140 Mtpa of LNG capacity have already been delayed to 2021 and beyond.

We expect the global LNG market to tighten between 2022 and 2024 as global demand continues to increase, while the growth in LNG supplies slows in the short to medium-term. The tightening of the LNG market is expected to support a recovery in prices during this period.

### *LNG SHIPPING COST*

The average LNG spot charter rates for steam turbine vessels fell by 7% to 48,800 USD/day in 2019, with the increasing number of LNG cargoes offset by the high number of commissioned LNG carriers. In 2020, charter rates declined further, mainly driven by a slowdown in the growth of LNG cargoes amid the pandemic. Meanwhile, the average leading shipping fuel price fell by 8% in 2019 and plummeted further in March 2020, driven by a fall in global oil prices.

The combination of these two factors has resulted in a decrease in shipping costs for spot LNG cargoes.

### **NATURAL GAS PRICES**

Global gas and LNG prices slumped in 2019 following two consecutive years of annual growth across all regional markets. This was mainly driven by a mild winter season in the northern hemisphere, slower pace of global gas consumption due to slowed economic growth particularly in China, a surge in global LNG exports, high gas and LNG inventories across major markets and strong gas production in the U.S.

In 2020, prices have continued to decline due to the combined effects of mild weather conditions across Europe and Asia, and slower demand due to COVID-19. In the first half of 2020, Asian and European gas and LNG prices were more than 50% lower compared to the previous year. However, there has been a recovery in prices in the second half of the year. Over the period January – October 2020, Asian and European gas and LNG prices were lower within the range 38-42% y-o-y.

### *NATURAL GAS PRICING MECHANISMS*

In 2019, the share of gas-on-gas (GOG) competition in global gas imports stood at 53%, exceeding the share of oil price escalation (OPE), which averaged 41%. This marked shift in the pricing mechanism towards GOG competition

has been mainly attributed to the shift in the pricing mechanism of gas imports in Europe, which is the largest gas importer on a regional basis. In terms of global pipeline gas and LNG imports, the shares of OPE in 2019 were 29% and 59% while the GOG shares averaged 62% and 41%, respectively.

Hub-linked pricing of European pipeline imports also supports the dominant share of GOG pricing in global pipeline gas imports. Meanwhile, the majority of global LNG trade is tied to long-term (LT) oil-indexed contracts with Asian buyers, which makes OPE the largest pricing mechanism for global LNG imports.

Despite the decline in the share of OPE pricing mechanism in gas trade, due to the increasing gas trade in gas-on-gas and LNG-on-LNG pricing, the oil-indexed pricing mechanism is expected to retain its dominant role in global LNG trade since the bulk of long-term LNG contracts are indexed to oil.

## CONCLUSION & PROSPECTS

The natural gas industry is expected to face a challenges in the short to medium-term, driven by slowing economic growth across the world caused by COVID-19. In addition, the low oil and gas prices observed in 2020 have caused many gas projects to be delayed and prompted a reluctance among investors to take FIDs in the short term. Furthermore, the number of rigs has

more than halved y-o-y (as at November 20th), with US count down by 62% (301 rigs in 2020 vs. 803 rigs in 2019).

Meanwhile, and notwithstanding these trends, the gas industry has been less hit than the oil industry, despite the volumes lost in the industrial, commercial and power sectors.

Low gas and LNG prices and coal-to-gas switching policies improved the call on natural gas in many major consuming countries (Germany, China, India).

Also, it is worth mentioning that the hit on natural gas demand has not been that dramatic. For instance, the loss in gas consumption in Europe was much lower than the losses in 2011 and 2014 (as of October 2020, less than 19 Bcm in 2020 vs 50 Bcm in 2011 and 2014 respectively)

Furthermore, GECF Member Countries have shown their robustness to the situation thanks to their long-term expertise in the gas industry with its well-known cyclical nature and their strong partnerships with the gas consumers.

Additionally, the implementation of new policies, environmental concerns, new gas supplies, industrial expansion and lower LNG shipping costs can be positive drivers to boost gas demand in many parts of the world.

However, in the short term there are



downside risks to the gas industry that require global cooperation and collaboration among GECF Member Countries and all market players. Such market actors include international organizations, policy makers, industries, research centres, technology owners, financial institutions and lenders.

Cooperation can help ensure the stability of the gas market, reduce its vulnerability and sustain the supplies of the “quadruple A” asset and versatile fuel of choice for sustainable development that is natural gas: Abundant, Available, Affordable, and Accessible.





# 02

## INTRODUCTION



## 2. INTRODUCTION

Natural gas continues to play an increasingly important role in the global energy mix. It has established a key role in meeting the energy efficiency, energy security and climate change goals of many countries around the world. With technological advancements and increased investment in infrastructure, gas is becoming more affordable and accessible.

However, the gas industry is facing some turbulence driven by a multiplicity of factors: trade tensions between major economies, significant LNG volumes on the market not finding sufficient receiving infrastructure or viable markets; and low oil and gas prices that do not offer a healthy business environment for the gas industry. Furthermore, gas demand is showing signs of stagnation and/or erosion due to aggressive green policies in Europe and market shocks, despite emerging marginal markets. Indeed, energy policies are showing inconsistencies towards natural gas, as they are exaggerating the support of renewable energy sources via generous subsidies taken away from the oil and gas industry preventing many regions from gaining access to energy. In this regard, the lack of investment in areas in need of energy is obvious, where natural gas can revolutionize the economic development of the regions/countries deprived of access to electricity and energy such as Sub-Saharan Africa.

Ironically, coal is the biggest challenge for natural gas despite the calls for cleaner energy. Funding is another challenge where we are witnessing a new trend of major banks moving away from funding fossil fuels including natural gas. A reluctance to finance fossil fuel projects will unfairly condemn natural gas to remain unexploited. The list above is not complete as there are other events on the gas market, which could shape the world into a new normal and a possible move away from business-as-usual. The most recent is the unexpected and unprecedented COVID-19 outbreak, which resulted in disruption to all sectors of the

economy. The gas industry is not immune to such disruptions, which have been recorded along the whole gas value chain. E&P has seen less activity and rig counts reduced by 51% y-o-y by the end of H1 2020 and a 30% y-o-y decline in global oil and gas upstream investment in 2020. Procurement activities have been severely affected leading to project delays and the postponement of FIDs. Service companies reduced their activities as well which was reflected in jobs losses (around 100,000 jobs were lost in oil and gas field service sector in the U.S.).

The market shrank to historical lows (in some instances gas and LNG prices were below \$2/MMBtu). Storage facilities were filled to capacity, reflecting lower demand and seasonal effects. Volume-wise, the major consumers in Europe – German, UK, Italy, Spain, and France – recorded drops in gas consumption for the first half of 2020 of 3%, 10.7%, 10.4%, 12% and 11.7%, respectively. The same trend was recorded for H1 2020 in Japan and the U.S. with a reduction of 5.5% and 1.9% y-o-y, respectively.

The above list of challenges is not exhaustive, but their combined effect, especially the impact of COVID-19, is notable in terms of the global gas market evolution.

In particular, GECF Member Countries are facing this turmoil as are all other gas players, in addition to an increased competition from non-GECF producers as well as inter-fuel competition. It is therefore important to enhance the dialogue among all market stakeholders to examine how to collectively address the risks for the gas industry.

The impact of the crisis has been felt by all, with different magnitudes. But it is also known that behind every challenge there is always an opportunity, if not opportunities. In this regard, the world should be unified to enable adequate solutions to overcome collectively the challenges posed so far to the benefit of all.



The opportunities are in cooperation, collaboration and inclusive dialogue to find common solutions for the gas industry and the gas market, but different according to the specifics of each country.

This report gives an in-depth review of the major developments in the gas and LNG markets up to October 2020 (or before depending on data availability) and explores historical trends from the past two years. Furthermore, it analyses the key issues influencing the gas market and identifies the trends most likely to persist in the short term, in addition to the identification of potential opportunities and threats for the gas industry.



# 03

## **GLOBAL ECONOMY**



GECF

### 3. GLOBAL ECONOMY

The pace of global economic growth picked up to 3.8% in 2017 driven mainly by growth in global trade and investment, as well as the implementation of fiscal stimulus and accommodative monetary policies in major advanced and developing economies. Global growth continued in the first half of 2018 driven by higher global trade flows and investment activity. However, increasing geopolitical issues as well as trade tensions negatively affected confidence, investment and job creation in the second half of 2018. Escalating trade tensions, mainly between the U.S. and China, were reflected in the slowdown of global trade growth. In addition, tighter financial conditions, especially in emerging economies, coupled with rising interest rates in advanced economies, resulted in subdued investment activities as well as capital outflow from developing economies towards advanced economies. Furthermore, uncertainties regarding a Brexit deal between the UK and Europe affected business activity. As a result, the pace of global expansion lost its momentum in the second half of 2018 and resulted in economic growth of 3.6% in 2018.

In 2019, the global economy continued to decelerate due to stagnating trade activities and subdued momentum in major advanced and developing economies. The continued deepening of trade tensions, rising geopolitical tensions as well as dampened industrial activities lead to a steady deterioration in the global growth outlook over the last year. In addition, escalating U.S.-China trade tensions together with uncertainties regarding Brexit affected global trade growth in 2019. Furthermore, economic sanctions, geopolitical tensions, and prevailing tight financial conditions resulted in weak investment growth especially in developing economies. In reaction to the fragile economic outlook and the risk of recession, accommodative monetary policies were announced by monetary authorities in

some major advanced economies like the Federal Reserve and European Central Bank. Likewise, some accommodative measures were implemented in developing economies like China and India to support economic activity. However, global economic growth slowed to 2.9% in 2019 (Figure 1).

While predominantly downside risks to the global economy have affected expectations for global growth in 2020, the outbreak of COVID-19 in China and its rapid spread across the world has caused inevitable damage to the vulnerable conditions of the global economy in 2020. Indeed, the outbreak of COVID-19 emerged as a “Black Swan” event in the Chinese economy and disrupted economic activities in the country. On the other hand, transmission of COVID-19 to South Korea, Japan, Singapore and other countries in Asia was reflected in a sharp decline in major Asian financial stock markets. The spread of COVID-19 to Italy, France, Spain, Germany and the UK affected major financial markets in Europe. Simultaneously, COVID-19 also reached countries in the MENA region and North America.<sup>1</sup>

The escalating number of COVID-19 cases across the world resulted in COVID-19 being classed as a pandemic rather than an epidemic. The COVID-19 pandemic has resulted in the most intensive health crisis as well as economic recession in recent decades. Hence, implementing containment measures to protect people's lives and support public health has become the highest priority for countries across the world. Economic activities have been interrupted due to lockdown measures. As a result, the outlook for the global economy has quickly reversed from a fragile recovery into a sharp recession, whose depth and duration is yet unknown. Lockdown of economic activities in most countries peaked in April 2020, and governments have implemented numerous

<sup>1</sup>GECF Secretariat. (2020). Expert Commentary- Impacts of Coronavirus on the Global Economy.



measures of social distancing, the closing of retail markets, travel restrictions, quarantine measures and the halting of economic activities. However, the outbreak of the virus has intensified in many developing economies and the pandemic has worsened in many countries. In addition, the possibility of a second wave of the virus has increased in those countries that lifted quarantine measures quickly. On the demand side, private consumption has declined markedly in many countries due to precautionary energy saving and increasing unemployment rates in many countries. Moreover, voluntary and obligatory social distancing by people in many countries meant demand in service sectors declined sharply. In addition, private investment by companies and individuals was halted or postponed due to tight financial conditions. Governments and central banks announced stimulus packages in order to boost their economies.<sup>2</sup> According to the IMF's policy tracker, more than \$10 trillion in fiscal policy support was afforded by governments globally and around \$6 trillion in liquidity was injected by central banks into monetary systems. However, it seems this may not be enough for the full recovery of the global economy. Global trade activities contracted significantly reflecting weak demand, the collapse in cross-border tourism, and supply dislocations related to shutdowns.

On the supply side, business closures and tight financial conditions on top of additional expenses for hygiene resulted in interruptions in the supply value chain and increasing supply costs. Global financial markets have been subject to extreme volatility due to high levels of uncertainty and risk to the global economy.

As the number of infections surged and the risk of a second wave increased in many countries, the outlook for the global economy worsened in the second quarter of 2020. In addition, expectations regarding economic recovery became weaker and slower than expected.

Therefore, the global economy was severely affected by the pandemic in the first half of 2020, with a significant decline in the second quarter of the year. However, it is expected that most of the major advanced and developing economies will start to recover in the second half of 2020, although at differing rates.

As of September 2020, considering the sharp decline of the global economy in the first half of 2020, with a slight recovery expected in the second half driven by easing lockdown measures and the resumption of economic activity, the GECF projects that the world economy will shrink by 4.5% in 2020. We have assumed that the outbreak of COVID-19 will be contained by the end of 2020 and there will not be a second wave of strict lockdowns in major economies, which slowed the expected pace of recovery in the second half of 2020. Moreover, there are no additional geopolitical risks such as an escalation of trade tensions or political unrest.

China, the origin of COVID-19, will be the only country with positive economic growth of 1.9% in 2020, while most major economies will experience considerable fallout in their economies. The U.S. economy is projected to decline by 5.5% in 2020, due to the pandemic-induced impacts as well as political uncertainty. The situation in India has become worse than expected because of the increasing number of COVID-19 cases. India's economy is also projected to shrink by 5.5% in 2020. The E.U. economy is estimated to shrink by 8.4% in 2020, with sizable and durable negative effects on business sentiment. Likewise, the UK economy is expected to slump by 9% in 2020. Japan's economy experienced a significant decline in the first half of 2020 due to emergency measures and lockdown of economic activities. It is expected that the resignation of Shinzo Abe, Japan's Prime Minister, will add more uncertainties to the economy, which is projected to shrink by 5.2% in 2020.

<sup>2</sup> GECF Secretariat. (2020). Expert Commentary- COVID-19 to push the global economy toward recession.



While economic recovery is expected to start from the second half 2020 in most major economies, the negative effects of the pandemic are expected to be huge and long-lasting.

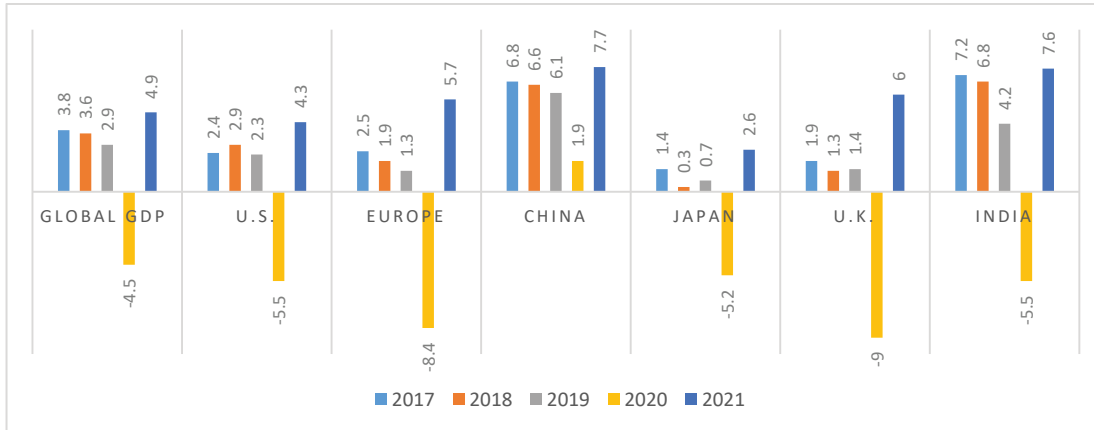
The global recovery is expected to see economic growth of around 4.9% in 2021, slower than previously expected. Most countries are expected to see higher growth rates in 2021, but the level of global GDP is expected to reach to pre-COVID levels only in 2022. Figure 1 illustrates the GECF projection of GDP growth for major advanced and developing economies.

It is worth mentioning that under the GECF worse-case scenario, in which there is a second wave of the pandemic with no solution for the virus, the global economy is expected to shrink by more than 5% in 2020.

In order to benchmark the GECF projections on the global economy, we illustrated in Figure 2 the projections of the GECF, IMF, World Bank, OECD and OPEC on global economic growth by August 2020. The IMF, in its World Economic Outlook released in June 2020, projected that the global economy would decline by 4.9% in 2020, revised down by 1.9 percentage points

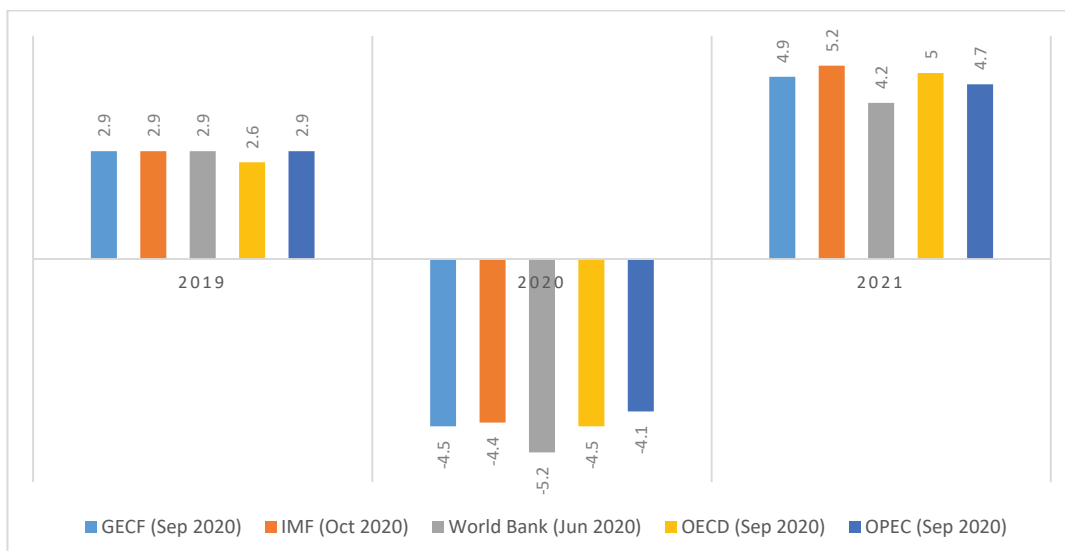
from the April 2020 World Economic Outlook. Likewise, the World Bank projects that the global economy will shrink by 5.2% in 2020. The OECD was more pessimistic on the impacts of COVID-19 on the global economy, projecting a decline of 6% in global GDP in 2020 in its single-hit scenario. OPEC projected a 4% economic decline in 2020.

**Figure 1: Global GDP growth (%) and projections in 2020 and 2021**



Source: GECF Secretariat based on IMF (data for 2017, 2018 and 2019) and GECF Secretariat (projections for 2020 and 2021)

**Figure 2: Benchmarking Global GDP growth (%)**



Source: GECF Secretariat based on data from IMF, World Bank, OECD and OPEC



# 04

## **THE IMPACT OF COVID-19 ON OIL AND GAS BUSINESS**



## 4. THE IMPACT OF COVID-19 ON OIL AND GAS BUSINESS

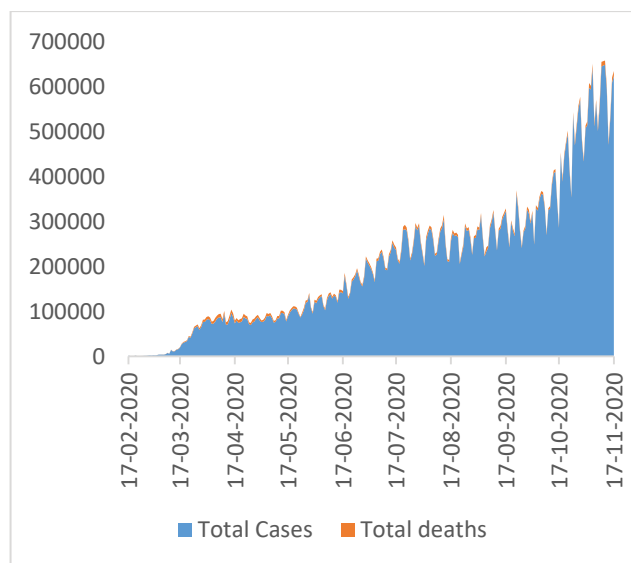
2020 began with a market shaken by the spread of a virus first discovered in Wuhan, China in December 2019, and its spread across the world. The powerful virus, COVID-19, caused the deaths of thousands of people in a short period.

On 31 December 2019, China reported an occurrence of pneumonia with an indistinct reason in Wuhan, Hubei province, to the World Health Organization (WHO).

In China, it has resulted in 4,749 deaths and affected 92 428 people as of 15<sup>th</sup> November 2020. COVID-19 spread to many countries across the world. Many countries have confirmed cases of the COVID-19 virus and travel provisions amongst other measures were taken by governments, with the purpose to limit the spread of the virus.

The second half of March 2020 witnessed the global impact of the COVID-19 crisis. On April 3<sup>rd</sup> Italy had registered more deaths than anywhere else in the world and accounted for more than a third of all global fatalities from the virus with total deaths of 44,683 and total cases of 1,144,552 as of November 15<sup>th</sup>. By April 3<sup>rd</sup> Spain overtook China in the number of people infected with COVID-19. The total number of infections rose to 110,238, above the 82,802 registered in the same period in China, where the disease originated. As of November 15<sup>th</sup> total cases in Spain reached 1,458,591 and total deaths 40,769. In the U.S., the number of confirmed cases has climbed, rising to 10,641,431. New York has been the hardest hit, with almost half of all the country's reported cases. Latin American countries, India and South Africa have ordered lockdown measures.

**Figure 3 : COVID-19 new cases and deaths per day worldwide**



Source: GECF Secretariat based on data from WHO

Given the situation, many preventative and crisis management actions have been considered by governments to reduce the spread of the virus such as: quarantine and self-isolation measures, locking down affected towns, raising the level of warning for COVID-19 to severe, health measures for travellers and reduced air and maritime movements. The pandemic has not only affected human lives all over the world, but also the global economy driven by a deceleration of the industrial, power and distribution sectors, with a significant impact on the global supply chain<sup>3</sup>. As of the date of this report, the world is already navigating a second wave of COVID-19. There have (as of November 15<sup>th</sup>) been 53,766,728 confirmed cases and 1,308,975 deaths in 198 countries and territories.

<sup>3</sup> GECF Secretariat. (2020). Expert Commentary- COVID-19 and its Implications on the Italian Natural Gas Market.



#### 4.1 THE EFFECTS OF COVID-19 ON THE OIL MARKET

Since the beginning of January and the rapid expansion of COVID-19, all the positive signs of a recovery in oil demand and prices that were previously expected shifted to a pessimistic scenario. As infections spread outside China, the oil market was increasingly impacted. Over a one-month time span, the effect of COVID-19 on oil demand changed from early appraisals that it would only lessen Chinese oil demand to significantly larger effects on worldwide financial markets for 2020. The International Energy Agency's (IEA) outlook on global oil demand released on August 13<sup>th</sup> 2020, showed the largest fall in a decade and highlighted that oil demand in 2020 is expected to be 91.9 mb/d in 2020, down by 8.1 mb/d y-o-y.

COVID-19 has altered the oil market in many ways. Amongst them, the travel restrictions imposed by several countries limited the utilization of jet fuel. The industrial deceleration after the decision taken by companies to keep employees at home to avoid any further spread of the virus resulted in lower oil consumption and production. These factors have had extreme consequences on oil consumption and led to gloomy prospects for oil demand among analysts and international agencies.

The fall in demand also dramatically impacted oil prices, which went into free-fall.

However, after the successful agreement of OPEC+, reached at the 10<sup>th</sup> (Extraordinary) OPEC and non-OPEC Ministerial Meeting, oil prices started to recover. As of November 18<sup>th</sup>, oil prices averaged \$42/Bbl which represents an increase of around 50% since the start of the production cuts implemented by OPEC+.

With the extension of the agreement of OPEC+ on June 6<sup>th</sup> 2020 to further extend the reduction

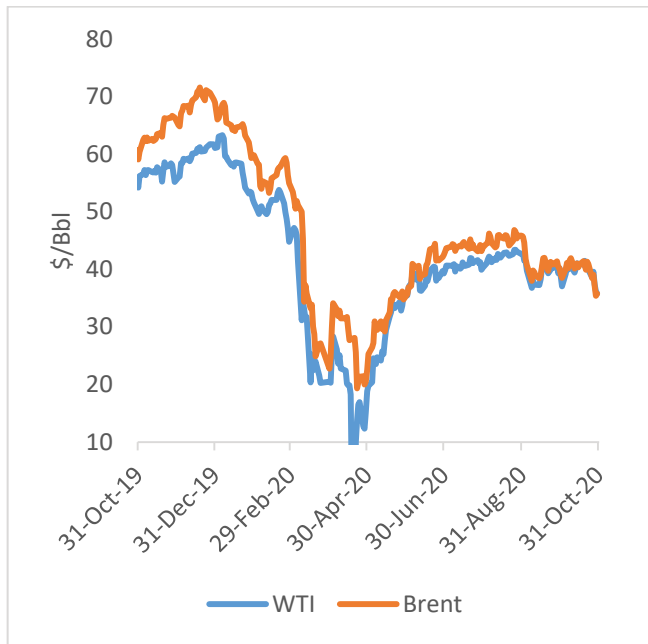
of 9.7 mb/d through July 2020, oil prices improved significantly. However, they remained weaker compared to last year's level.

It is true that that the global spread of COVID-19 worldwide added and is adding downward pressure on oil prices, with growing uncertainty and room for speculation. Nevertheless, the hopes of a recovery in the oil market are growing thanks to global efforts to find a vaccine as quickly as possible. This is reducing price uncertainty for the coming months and giving a certain confidence to market participants regarding the future of oil prices.

As we are witnessing an increasing number of cases in many countries and a second wave of COVID-19, a return to lockdown measures would be very costly to the world. A partial reduction of economic activity, although at a lesser scale than during the first wave, would still have repercussions on oil and gas markets. The extent of such repercussions is another uncertainty that will only be known in the coming months based on how countries control the situation, and the lessons learned from the first wave, especially since we are now talking about the imminent availability of vaccines and the affordability of treatment.

<sup>3</sup> GECF Secretariat. (2020). Expert Commentary- COVID-19 and its Implications on the Italian Natural Gas Market.

**Figure 4: WTI and Brent Oil Prices evolution**



Source: GECF Secretariat based on Refinitiv Eikon

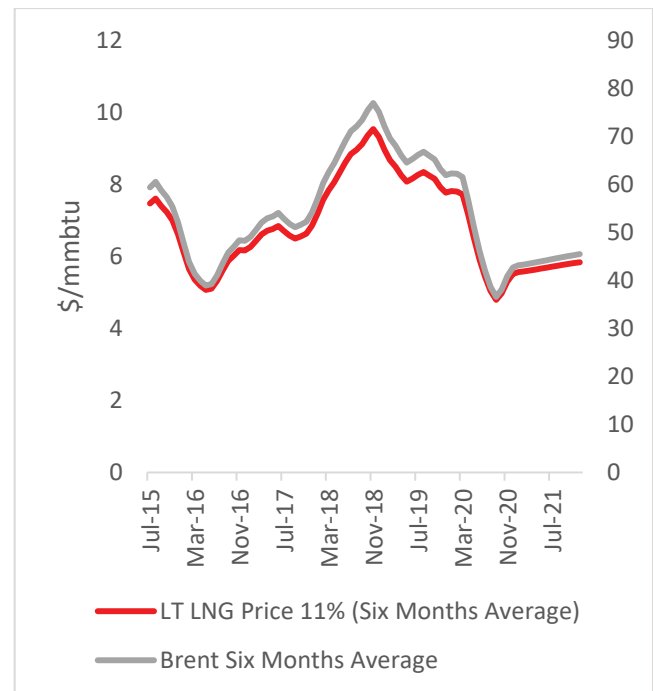
## 4.2 THE EFFECTS OF COVID-19 ON THE GAS/LNG MARKET

### 4.2.1 EFFECTS ON LONG TERM OIL INDEXED CONTRACTS

Having analysed the impact of COVID-19 on the oil market, it is important to examine the impact on the gas and LNG business. The oil-indexed, long-term contract price is one of the fundamental principles of the GECF Member Countries. It supports the crucial role of long-term gas contracts to ensure stable investments in the development of natural gas resources. The majority of GECF Member Country contracts are based on long-term oil indexation. The effect of the drop in oil prices during H1 2020, caused by COVID-19, had a direct impact on oil-indexed gas prices. The impact on long-term gas prices was more apparent during the second part of the year. Price levels in 2020 are far from the double-digit prices observed in 2018. The impact of COVID-19 will be felt on oil indexed long-term contracts with a reduction of almost 50% of the

gas price in 2020 and 2021 compared with the 2018 level. The decrease in oil prices is also reflected in the third and fourth quarters of 2020 for the majority of long-term LNG contracts, with the impact to continue into 2021.

**Figure 5: Six-month Average LT LNG price vs Oil price**



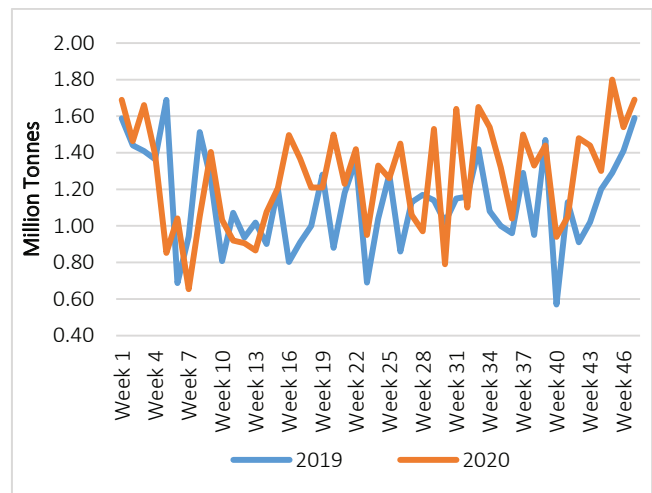
Source: GECF Secretariat based on data from Refinitiv Eikon

It is worth mentioning that oil-indexed contracts are valuable instruments to maintain the upstream investments required to bring natural gas and LNG to consumers. In addition, oil-indexed contracts are usually protected from the volatility of oil prices due to the three or six-month lag that the pricing formula usually incorporates. This also helps to ensure stable revenue streams for producers, as well as a visibility on the amounts due to the consumers.

### 4.2.2 EFFECTS ON SPOT AND SHORT TERM LNG CONTRACTS

As with all other commodities, the effect of COVID-19 on global gas demand will depend on both the gravity and time required to contain the virus. Our estimates forecast gas demand in the main European countries for 2020 (Germany, Italy, the UK, France, the Netherlands, Spain, Belgium, the Czech Republic and Poland, which represent 79% of E.U. gas demand in the last five years), to be down by 7-9%, or a decline of 15.5-19 Bcm on a y-o-y basis. For China, the hit to gas demand in February was offset by the higher consumption in January, and the recovery since March driven by urban gas and the chemical industry. For the full year 2020, the pace of China’s gas demand growth is forecast to slow to around 3-4%. In the U.S., although electricity demand fell during the lockdown, higher gas burn, which continues to displace coal, offset lower gas consumption in the industrial and residential/commercial sectors. For the full year 2020, gas consumption in the U.S. is forecast to decline by 3.1% y-o-y. Moreover, the lockdown measures taken by all governments to lessen the spread of COVID-19 impacted heavily on gas demand in all sectors. With a recovery in economic activity, albeit restricted, forecasts have shown that an overall decrease in demand will be recorded for 2020, with the drop in demand focused on the first half. Further weakness could occur if the second wave of COVID-19 is more severe than the first wave and the availability of vaccines delayed. This situation may result in further restrictions, travel limitations, curbing in industrial output and domestic consumption all over the world.

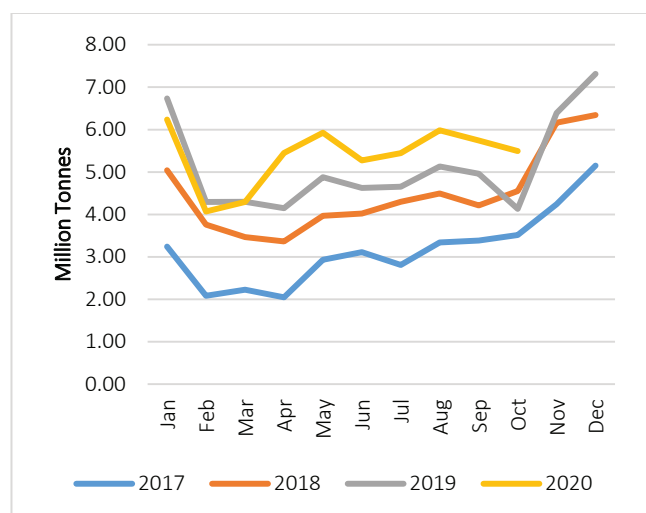
**Figure 6: Trend in China's Weekly LNG Imports**



Source: GECF Secretariat based on data from ICIS LNG Edge

As shown in the chart, LNG imports into China fell 4.8% in Q1-2020 y-o-y. In April and May, China recorded a considerable recovery with increases of 30.4% and 20.9%, respectively y-o-y, due to the gradual easing of COVID-19 restrictions, which offset the decline recorded during Q1 2020. For the period January-October 2020, China’s LNG imports rose by 12% y-o-y to 53.9 Mt. The increase in China’s LNG imports during Q2 and Q3 2020 was also supported by low-priced spot LNG available in the market, which displaced some pipeline gas imports into the country.

**Figure 7: LNG volume imported to China from January to October 2020**

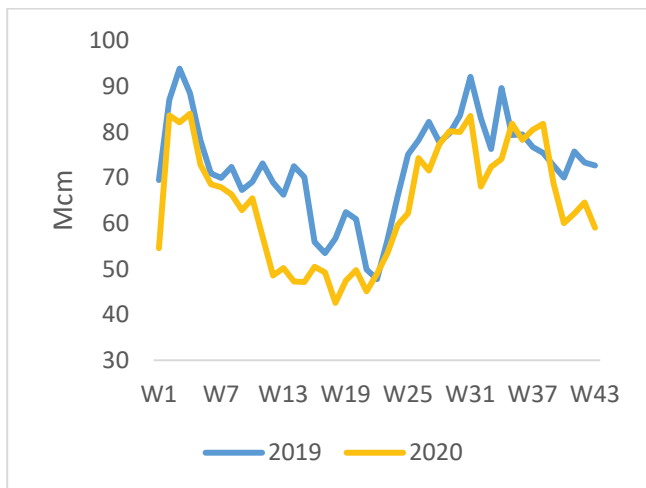


Source: GECF Secretariat based on ICIS LNG Edge



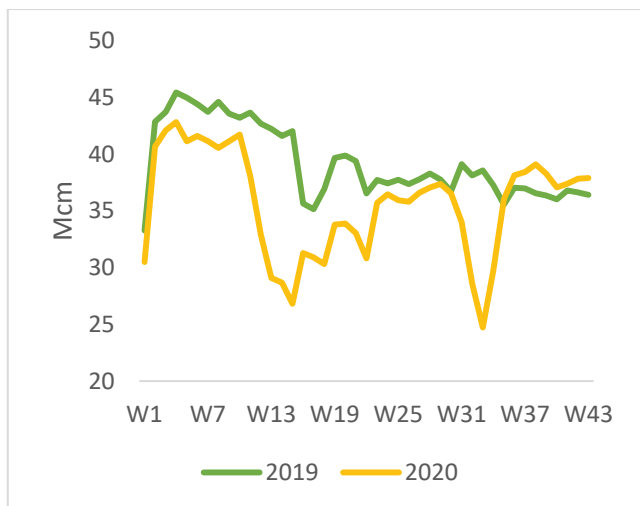
In Europe, gas demand decreased as it went into lockdown. Italy, Spain and France were the first countries to impose strict confinement rules. Italy took extreme measures to contain the spread of COVID-19, the lockdown was implemented on 10 March followed by closure of non-essential services from 12 March and non-essential industry closing from 23 March. As illustrated in Figures 8 and 9 below, the power generation sector and the industrial sector fell by 10.5% and 7.3%, respectively y-o-y, for the first ten months of the year 2020 due to the lockdown seen in Italy

**Figure 8: Weekly average evolution of the Italian Power Gas Demand Jan/Oct**



Source: GECF Secretariat based on Snam

**Figure 9: Weekly average evolution of the Italian Industrial Gas Demand Jan/Oct**

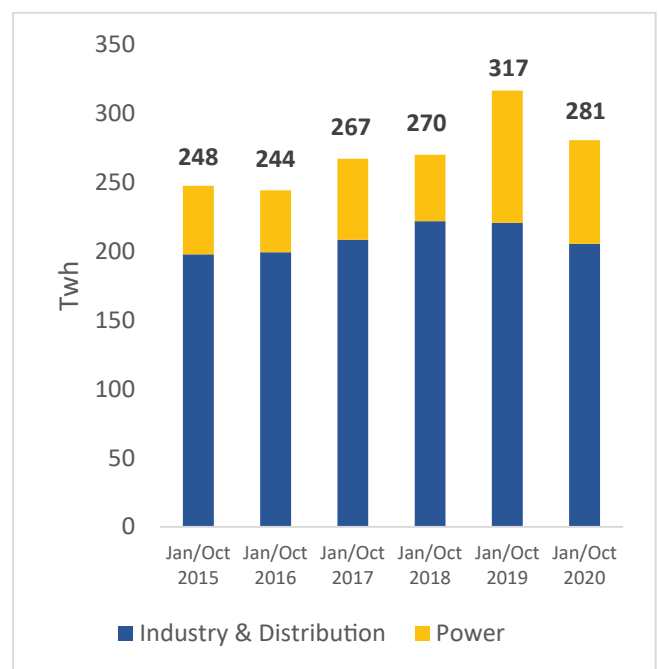


Source: GECF Secretariat based on Snam

For Spain, which saw a peak of around 10,000 infections and 950 deaths per day, the trend improved as the World Health Organization confirmed just three new deaths and 200 new active infections on June 30<sup>th</sup>, considerably lower than the rates recorded on March 25<sup>th</sup>. But from August the number of cases started to increase with 1,458,591 people having been confirmed to have contracted the disease and 40,769 deaths as of November 17<sup>th</sup>.

The measures implemented by the Spanish government have had an important impact on natural gas demand in the industrial, distribution and power generation sectors. Spanish gas consumption dropped in the first ten months of the year. It is difficult to predict the pace of the economic recovery that will enable the country to return to a more normal gas consumption level. In Figure 10, it is shown that Spanish natural gas consumption for the period January-October 2020 fell by 11% compared to 2019 and 4.7% when compared to 2018.

**Figure 10: Jan/Oct Spanish Natural Gas Consumption by Sector**



Source GECF Secretariat based on Enagas



In the U.S., gas demand decreased as the country went into partial lockdown. The forecasts for gas supply and demand for 2020 in November were much lower than March forecasts of 95.3 bcf/d for output and 87.3 bcf/d for consumption. The U.S. Energy Information Administration (EIA) announced in its Short-Term Energy Outlook (STEO) in November that U.S. natural gas production and demand will drop in 2020 and 2021 from record highs in 2019 due to the measures taken by the US government to reduce the spread of the virus.

On the production side, EIA expects dry gas production to drop to 91 bcf/d in 2020 and 87 bcf/d in 2021 from a record level of 97 bcf/d in 2019. This will represent the first annual decline since 2016. On the consumption side, EIA also projects that U.S. gas consumption will drop to 83.7 bcf/d in 2020 and 79.41 bcf/d in 2021 from a record 84.97 bcf/d in 2019.



# 05

## ENERGY POLICY DEVELOPMENTS



## 5. ENERGY POLICY DEVELOPMENTS

Energy policies are the main drivers of natural gas supply and demand. The policy measures implemented by governments, along with their effectiveness and success level, are determinants of the future supply and demand for natural gas. The demand for natural gas is deeply affected by energy efficiency, decarbonization, energy substitution, and energy market liberalization policies, while the production targets and upstream fiscal policies are the driving forces of natural gas supply.

On the demand side, most of the energy policy developments in 2019 were in favour of natural gas, particularly the policies to phase out nuclear and coal. As the coal and nuclear phase-out policies are implemented in the main natural gas-consuming countries, this will have a significant impact on the level of natural gas demand. Meanwhile, some policies could be disadvantageous for natural gas, such as postponement of the nuclear phase-out in some countries.

On the supply side, in addition to ambitious production targets, some producers are incentivizing domestic production through reforming their upstream fiscal regimes such as royalty tax rebates to reduce the investment risks to foster domestic production of natural gas. However, the higher cost of production and the COVID-19 pandemic bring the effectiveness of the energy policies into question and make it difficult for some of the producers to realize their production targets.

In this section, we provide the latest developments of energy policy in major regions, reflecting developments since January 2019.

### ASIA PACIFIC

The energy policy landscape in Asian countries such as China, Japan, and South Korea is experiencing a structural change due to energy

substitution policies, energy efficiency policies, and movement towards the liberalization of electricity and natural gas markets. As GECF member countries play a pivotal role in the LNG market in this region of the world, any policy measures implemented by the governments could affect the GECF export level into this market. In addition, Australia's LNG production and exports to the Pacific region have also been increasing.

China, as one of the main drivers of natural gas demand, is pursuing energy policies that will affect the country's energy mix significantly in the coming years. In line with the country's intention to solve the air pollution issue, the Chinese government has set a target to increase the share of natural gas to 15% by 2030. In this regard, the Chinese authorities are implementing a policy of coal-to-gas switching to achieve the desired share of natural gas in the energy mix. The government will fund coal-to-gas boiler conversion projects to stimulate clean heating and also provide financial subsidies that will cover 23 cities. However, for peak-shaving purposes, China is easing some coal limiting policies in the winter in the residential sector.

The coal-to-gas switching policy in the power sector, coupled with the coal-to-gas and electricity-switching policy in households (which has been expanded to households in 37 cities from only 12 cities) will keep China as the main source of global natural gas demand growth until 2025.

China has also started natural gas price deregulation reform. China is deregulating wholesale natural gas prices for non-residential users such as power plants and industrial users. Meanwhile, the natural gas price for residential users remains regulated and low. However, the country is moving forward with plans to deregulate the prices for residential users and is giving companies more freedom to raise the



price for residential users as it can for non-residential users. In addition, in line with a movement toward liberalized natural gas mechanisms and allowing third-party access to natural gas infrastructure, the Chinese government is implementing a policy to allow third-party access to LNG import terminals. By implementing this policy, it is expected that, in addition to state companies, other players will enter to Chinese LNG import sector.

In Japan, based on the long-term energy supply and demand plan, the government set a target of 22-24% renewable energy share in the power generation mix by 2030. To realize this target, the government is incentivizing electricity generation from renewable energy sources through feed-in tariffs. However, some industry experts believe the country will face some challenges achieving this target. Also, due to the seasonality of renewable energy sources, the difference will likely be covered by imported spot LNG.

South Korea's plans to move away from coal and nuclear are likely to be beneficial for natural gas expansion. However, the expected growth is not that impressive. Based on 13th Long-term Natural Gas Plan, South Korea's LNG demand is expected to increase to 40 Mt by 2031.

In the Pacific region, one of the main pillars of the Australian government's energy policy is to attract investment to stimulate production from its huge natural gas resources. Another part of Australia's energy policy is to eliminate any unnecessary regulation that hinders the development of natural gas projects. In the nuclear energy sector, uranium mining is banned in some regions, and it is expected that more limitations will be imposed in the coming years.

Most recently, the Australian government removed emissions targets from its National Energy Guarantee (NEG) renewable energy policy. Based on the objectives of the plan, a 26% reduction in power sector emissions will be put on hold.

Despite concerns regarding domestic natural gas shortages, the government decided not to impose any restrictions on LNG export, which is one of the main pillars of the country's economy.

## EUROPE

The E.U. Emission Trading System reforms for the period 2021-2030 (Phase 4) have been approved. Based on the reform, the emission volume will be reduced by 2.2% annually. To correct large emission allowance surpluses and the imbalance between supply and demand, the number of allowances in the Market Stability Reserve (MSR) will be doubled by the end of 2023. A new mechanism to limit the validity of these allowances in the Market Stability Reserve will also be implemented in 2023. The E.U. ETS was set up in 2005, and it remains the largest emissions trading system globally. It covers 45% of the E.U.'s greenhouse gas emissions and emissions from the sectors under ETS will be 21% lower than the 2005 level.

Recently, the E.U. has also approved a 32% renewables target by 2030. The previous 27% renewables target was approved in October 2014 as a part of the 2030 climate and energy framework. It should be noted that the E.U. is targeting 20% of renewables by 2020 and setting the 32% target translates to a 12% increase in 10 years. Due to the declining costs of renewables, experts believe this target is realistic, however, some environmental groups say the 32% target does not go far enough to reach environmental goals.

To realize the 32% renewables target, the E.U. will have to achieve a 25% share by 2024. This will negatively affect the power sector's gas demand. On the other hand, gas demand in the power sector is expected to be affected positively by coal and nuclear phase-out policies. We expect that the negative effect of renewables on gas demand in the E.U.'s power sector will be offset by the gas demand driven by the coal and nuclear phase-out policies. As a result, total gas demand in the E.U.'s power sector will remain stable until 2025.

In addition, with the election of Ursula von der Leyen as president of the European Commission on 16th July 2019, a European Green Deal was placed at the top of the E.U. energy policy agenda. In her political guidelines for the next commission (2019-2024), she highlighted the strategy to make the E.U. carbon neutral by 2050 and to become the world's first carbon-neutral continent. In the new deal, it is proposed to transform the European Investment Bank (EIB) into a climate bank and to double the bank's budget on climate by 2025 in addition to the issuance of green bonds.

Another significant movement at E.U. level towards the zero-carbon economy was the decision made by the EIB in November 2019 to ban financing fossil fuel projects by the end of 2021. Based on the new policy, only energy projects with less than 250 grams of CO<sub>2</sub> emission per kilowatt-hour can apply for EIB financing. Natural gas projects, such as power plants, are expected to be affected significantly by the new policy.

At the country level, in line with E.U. directives, some European governments are implementing policies to phase out coal and nuclear power plants such as Germany, France, and Spain. France and the Netherlands are planning to phase out their coal power plants by 2021 and 2030, respectively. Meanwhile, based on the previous plans, the French government was going to decrease the share of nuclear from the current 75% to 50% by 2025. France recently announced that this target was not realistic and would be postponed to 2035. Also, Denmark approved plans to add 2,400 MW of new offshore wind capacity to its power generation mix by 2030. Denmark plans to have 55% of renewable energy in its energy supply mix by 2030.

## NORTH AMERICA

The U.S. is targeting a 26-28% greenhouse gas emissions reduction by 2025 compared to 2005 levels. Coal power plants are being replaced by

natural gas in the country, and investment in the coal industry is expected to slow down. Coal production in the U.S. decreased from 1,075 Mt in 2008 to 660 Mt in 2016. After a slight increase in 2017 y-o-y, it again decreased by 2.6% in 2018 (y-o-y).

Meanwhile, to boost LNG production and exports, the U.S. Department of Energy is planning to ease the requirements for US LNG exporters. According to current regulation, LNG exporters should report the end-use country for their exported LNG. Based on the regulation, they have to mention the country of delivery and not the end-user country. Furthermore, the Federal Energy Regulatory Commission (FERC) has announced its plans to speed up the LNG project approval process.

## ENERGY POLICIES OF THE COUNTRIES TO COPE WITH THE NEGATIVE IMPACTS OF COVID-19

Countries across the world are implementing energy policies and stimulus packages to cope with the negative impacts of COVID-19. The supporting mechanisms include fiscal programs, tax rebates, lowering domestic energy prices for consumers, and relaxing the rules and requirements in the energy sector.

The central bank of China has announced its plans to maintain liquidity in its financial sector in addition to promoting lending mechanisms to support small businesses. Also, as COVID-19 comes under control, the Chinese government has decided to cut domestic prices of natural gas for non-residential users to help industry resume activity.

The U.S. president signed a 2 trillion USD bill in 2020, the largest stimulus package in U.S. history, to support the economy. The package will cover direct payments, tax rebates, and loans to individuals and businesses impacted by the pandemic. In the energy sector, the federal government and states are supporting the



industry by implementing policies to offset the impact on producers, such as lowering offshore royalty rates during the pandemic, awarding a waiver for Bakken producers to keep wells uncompleted and the U.S. Environmental Protection Agency's decision to relax rules for summer gasoline standards.

Also, the European Central Bank (ECB) in mid-March 2020, unveiled a 750 billion Euros package to purchase bonds and support financial markets. Germany, the leading European economy, also unveiled a fiscal stimulus program aiming at increasing lending levels and funding for industries impacted by COVID-19.

In India, the government unveiled a fiscal package accounting for 23 billion USD to support households that suffered from the lockdown measures due to COVID-19. The package will help poor households by direct payments and food supply. The government will also reduce domestically produced natural gas prices, well below the imported LNG prices for six months for domestic consumers.

In Latin America, some projects have been delayed, and Brazil decided to postpone power generation and transmission auctions because of COVID-19. Also, the Mexican government announced that it would cut Pemex taxes to offset the negative impacts of the pandemic.

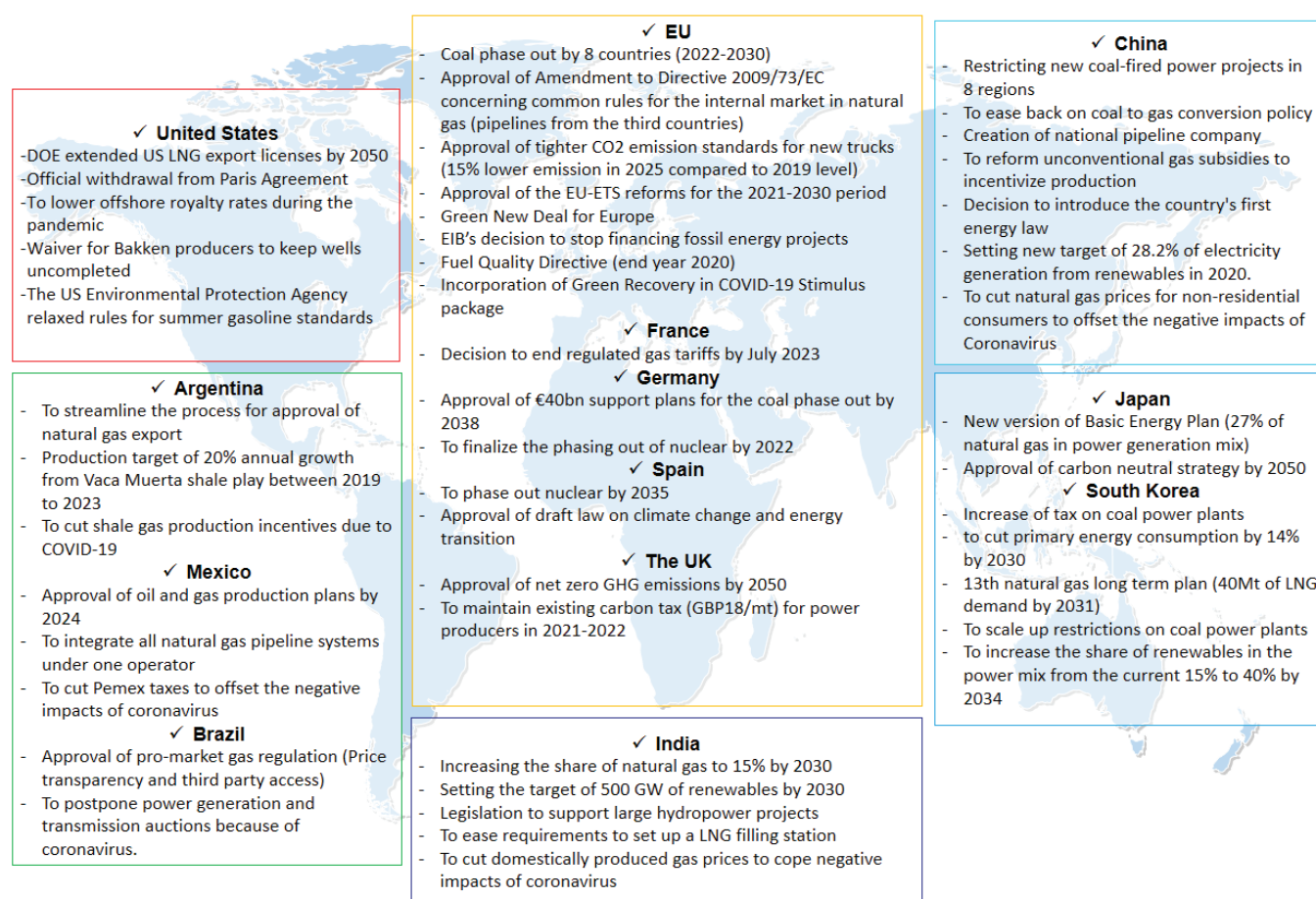
## IMPLICATIONS OF ENERGY POLICY DEVELOPMENTS

Most of the energy policies implemented in 2019 are supportive of natural gas and renewables in the coming years, particularly the policies to phase out nuclear and coal. Therefore, the level of renewables penetration and the relative prices of renewable energy sources will play a vital role in the determination of future natural gas demand. On the other hand, if we consider the energy policies that support subsidizing energy prices other than natural gas and the reluctance

of some countries to tackle climate change issues, these can harm the share of natural gas as the cleanest fossil fuel. However, the credentials of natural gas make it a destination fuel for the energy transition era and a reliable solution to complement the intermittency of renewable energy sources.

Regarding the implications of COVID-19 on energy policies, in addition to impacts on the decarbonisation policies, it is expected that the lower prices of natural gas due to COVID-19 and excess supply in the markets will provide an opportunity for countries to reform their energy sector and eliminate subsidies from energy prices.



**Figure 11: Energy Policy Developments (2019 & H1 2020)**


Source: GECF Secretariat

# 06

## NATURAL GAS CONSUMPTION



GECFA

## 6. NATURAL GAS CONSUMPTION

### 6.1 GLOBAL NATURAL GAS CONSUMPTION

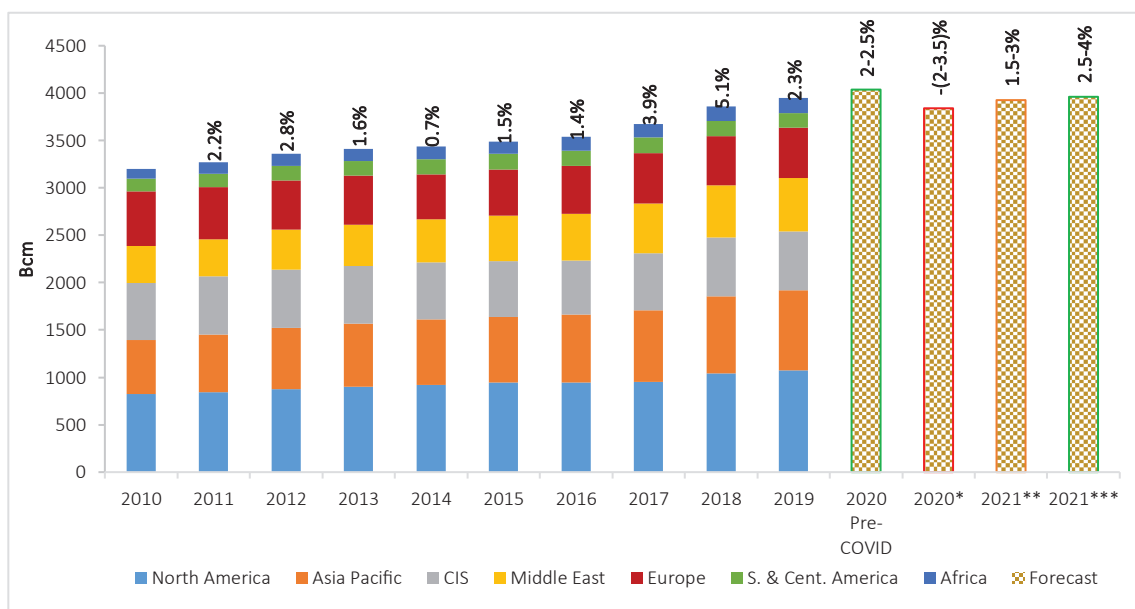
#### 6.1.1 RECENT TRENDS

##### GLOBAL GAS CONSUMPTION IN 2019

Global gas consumption is estimated to have grown by around 2.3% in 2019 to 3.95 Tcm, which is lower than the strong pace of growth recorded in 2017 and 2018 (see Figure 12), but around the same pace of growth as the 10-year average of 2.5%. This weaker growth in gas consumption is mainly driven by a slowdown in

consumption growth in the U.S. and China, which both accounted for the bulk of incremental consumption in 2018. In addition, weaker global economic growth, mild winter weather and higher nuclear availability in Japan and South Korea contributed to the slowdown in consumption.

**Figure 12: Trend in Global Natural Gas Consumption**



Source: GECF Secretariat based on data from BP Statistical Review 2019, Cedigaz and IEA Monthly Gas Statistics  
(\* ) – GECF’s Forecast for 2020

(\*\*) – GECF’s Forecast based on another mild winter season and 90% recovery in gas demand lost due to COVID-19

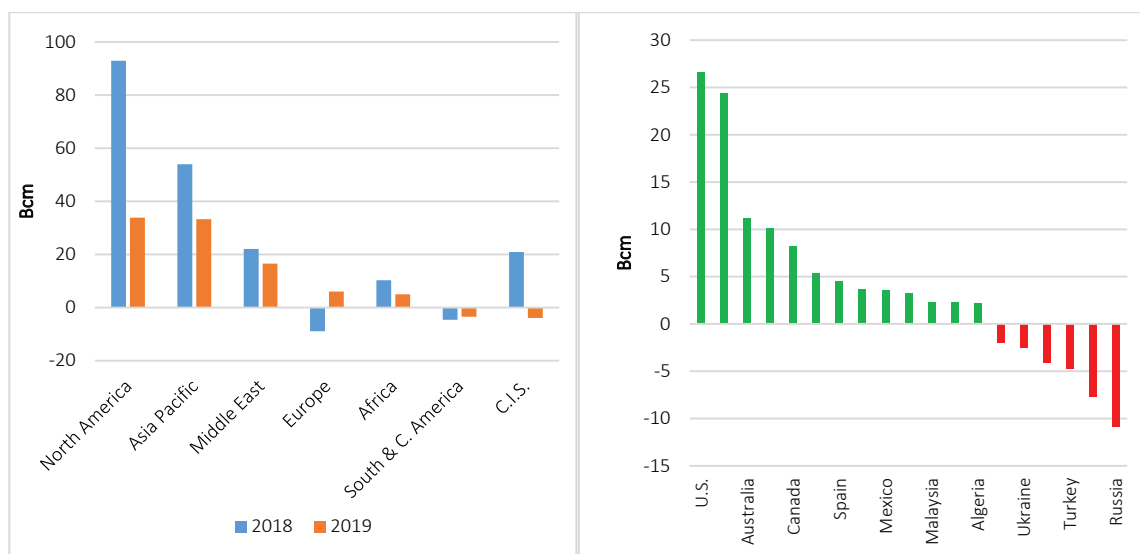
(\*\*\*) – GECF’s Forecast based on a return to normal weather and 80% recovery in gas demand lost due to COVID-19

Note: For both scenarios of gas consumption in 2021, emerging Asian countries, particularly China and India, are expected to contribute to an increase in consumption

On a regional basis, all regions except South & Central America and C.I.S recorded an annual increase in natural gas consumption. As in 2018, North America and Asia Pacific accounted for the bulk of global incremental gas consumption in 2019.

As shown in Figure 13, gas consumption growth slowed significantly across most regions. Meanwhile, Europe reversed the decline in gas consumption recorded in 2018.

At the country level, the U.S., China, Australia, Iran and Canada recorded a significant jump in gas consumption while Russia, Japan and Turkey’s consumption fell sharply. The overall increase in consumption in major gas consuming countries far outweighed the lower consumption in some countries.

**Figure 13: Trend in Gas Consumption & Incremental Gas Consumption in Major Markets in 2019**


Source: GECF Secretariat based on data from Cedigaz, India's PPAC and China's Chongqing Petroleum and Gas Exchange

The U.S. led the growth in gas consumption in North America with a share of almost 80% of the region's incremental demand. Gas consumption in the country expanded by 3.1% (26.6 Bcm) y-o-y to 878.6 Bcm but was slower than the 10.8% growth recorded in 2018. The power sector continued to be the main driver of gas consumption growth in the U.S., accounting for 77% of the incremental gas volumes consumed in 2019, with consumption in the residential and commercial sectors holding relatively stable. Despite a small decline (-0.5% y-o-y) in electricity production to 4,118 TWh, driven by a decline in cooling degree days (CDD), gas burn in the U.S. jumped by 7.7% y-o-y in 2019. Similarly, renewables and nuclear were also up 7.8% and 0.3% y-o-y while coal and hydro dropped by 15.7% and 6.4% y-o-y respectively. Gas is the largest fuel consumed in the power sector with a share of 38%, followed by coal (23%), nuclear (20%), renewables (11%) and hydro (7%). The increase in gas burn was supported by the retirement of almost 14GW of coal-fired power plant capacity. Canada and Mexico also recorded an increase in gas consumption.

In Asia, China continued to be the demand centre for gas for a third consecutive year and accounted for around 70% of the region's incremental gas demand. China recorded another year of strong growth in natural gas consumption in 2019 which increased by 9.2% (+25.8 Bcm) y-o-y to 306.9 Bcm, which is almost half of the annual growth recorded in 2018. This slowdown is attributed to weaker economic growth, sluggish industrial activity, due to the trade war between the U.S. and China, easing of the coal-to-gas switching policy and support for clean-coal technology in the country. In addition, lower electricity margins as a result of subsidy cuts slowed gas burn significantly in 2019. However, gas consumption continued to grow across all sectors, including the industrial (+9.3% y-o-y) and power (+1.9%) sectors.

Meanwhile, Australia's gas consumption surged by 26.4% (+11.2 Bcm) y-o-y to reach 53.3 Bcm in 2019. This was driven by an increase in gas consumption for its own energy use, since LNG facilities continued to ramp-up in the country, and higher gas burn (+19.3% y-o-y) in the power sector.

In contrast, gas consumption in Japan and South Korea fell by 6.8% (-7.7 Bcm) and 2.4% (-1.4 Bcm) y-o-y to 105.8 and 55.0 Bcm last year. This was driven by mild winter weather, which restrained gas demand for heating in the residential and commercial sectors, lower electricity production and higher nuclear availability in both countries. In 2019, electricity generation from gas in Japan and South Korea fell by 6.4% and 5.4% y-o-y while nuclear was up 33.5% and 9.4% y-o-y respectively. It should also be noted that coal-burn also dropped by 6.9% and 6.0% in Japan and South Korea respectively.

As mentioned before, Europe's gas consumption recovered in 2019 following a decline in 2018, despite mild winter conditions during the 2018/2019 winter season. The region's consumption grew by 1.2% (+6.1 Bcm) y-o-y to 529.8 Bcm, driven mainly by coal-to-gas switching in the power sector. The region's stronger gas consumption was led by Spain (+14.1% or 4.5 Bcm) and Germany (+3.6% or 3.2 Bcm) and was coupled with smaller increases in other European countries, which offset a sharp decline in Turkey (-9.6% or 4.69 Bcm). Spain's electricity production increased by 0.5% (+1.4 TWh) y-o-y while in Germany it fell by 5.4% (-33.2 TWh) y-o-y. In Spain, electricity produced from gas and renewables grew by 48.2% (+26.6 TWh) and 11.9% (+7.3 TWh) while production from coal and hydro slumped by 66.1% (-24.4 TWh) and 26.9% (-9.7 TWh) y-o-y respectively. Similarly, gas burn and renewables output in Germany jumped by 13.1% (+10.1 TWh) and 7.7% (+11.9 TWh) y-o-y respectively, which offset a drop in coal burn of 25.5% (-56.5 TWh).

Meanwhile, the drop in Turkey's gas consumption was driven by a decline in gasburn (-38.6% y-o-y), which was displaced by higher hydro (+47.4%) and renewables (+27.8%).

The Middle East's gas consumption rose by 3.0% (+16.6 Bcm) to 562.4 Bcm, which is the third highest increase at the regional level. Iran accounted for more than 60% of the incremental

gas consumption in the region, driven by an increase in consumption in the power sector, as the country continues to drive the switch from fuel oil to gas in power generation.

Similarly, in Africa, Algeria drove the increase in the region's gas consumption followed by Egypt and Nigeria. Algeria's gas consumption rose by 4.7% y-o-y in 2019, supported by higher demand from the power sector.

In Latin America, gas consumption fell slightly as a result of weaker consumption in Venezuela and Argentina, as a result of a contraction of the economies of both countries.

As stated before, gas consumption in the C.I.S. region fell 0.6% (-3.9 Bcm) to 621.2 Bcm, following a significant increase recorded in 2018. Gas consumption in Russia and Ukraine dragged the region's gas consumption down due to mild winter weather, which curbed gas demand for heating.

### 6.1.2 EUROPEAN EMISSION ALLOWANCE (EUA) PRICE AND ITS IMPACT ON GAS DEMAND

As mentioned before, the growth in Europe's gas consumption in 2019 was supported by coal-to-gas switching in the power sector in several western European countries. The EUA unit, which is equivalent to one tonne of CO<sub>2</sub>, is traded on the E.U. Emissions Trading Scheme (ETS) and is aimed at reducing greenhouse gas emissions. In the power sector, the EUA price is applied to CO<sub>2</sub> emissions and increases the cost for electricity generation, particularly from fossil fuels. The EUA price increases the competitiveness of gas-fired power generation over coal given that coal emits around double the amount of CO<sub>2</sub> when burnt compared to gas.

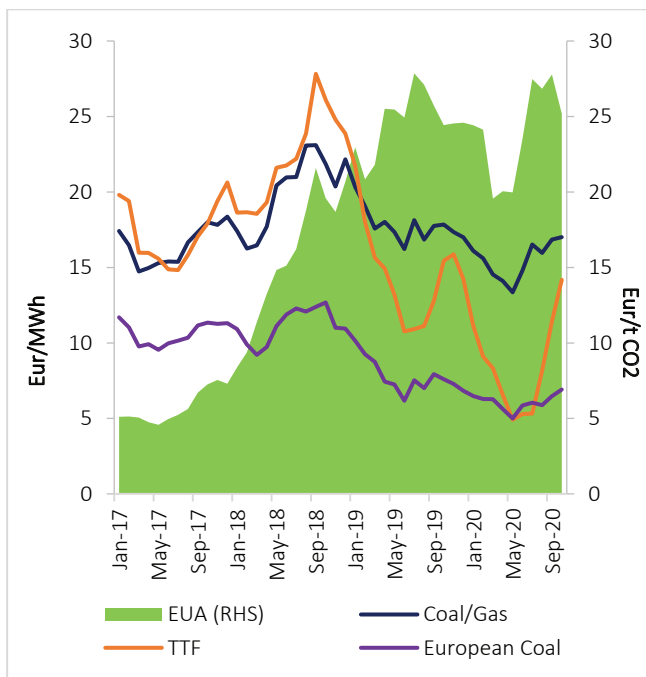
In 2019, the strong EUA price (in excess of Eur20/MWh) and multi-year low gas prices in Europe held the TTF below the coal-to-gas switching price as shown in Figure 14. This has



in turn facilitated coal-to-gas switching in the power sector in several European countries, particularly in Germany.

Between January and October 2020, gas prices remained well below the coal-to-gas switching price. This trend may continue for the rest of the year and into 2021 if carbon prices remain strong and gas prices are competitive with coal.

**Figure 14: Coal-to-Gas Switching, TTF, European Coal and EUA Prices**



Source: GECF Secretariat based on data from Argus, EMBER and Refinitiv Eikon

From January to December 2019, OECD Europe's electricity production fell by 1.0% (36 TWh) y-o-y to 3,489 TWh. Electricity generation from coal in OECD Europe fell by 148 TWh (-21.7%) y-o-y during the same period while electricity production from renewables and gas rose by 70 (+9.7%) and 40 (+5.9%) TWh respectively. The drop in coal contribution in the power sector is attributed to coal-to-gas switching and the phase out of coal-fired power plants in some European countries.

This coal-to-gas switching observed in Europe highlights the key role that competitive gas prices and a strong carbon price play in decarbonising the power sector and driving gas demand.

In 2020, although we were expecting a slight increase in coal-to-gas switching in Europe, the majority of the coal-to-gas switching potential was utilized in 2019. In addition, lower electricity demand due to COVID-19 lockdown measures has significantly impacted coal-to-gas switching potential in Europe. Between January and July 2020, electricity production in OECD Europe fell by 104 TWh, mainly due to the COVID-19 lockdown measures, which significantly reduced power demand. Meanwhile, electricity generation from renewables including hydro jumped by 79 TWh. In contrast, electricity production from coal, nuclear and gas fell by 83 TWh, 59 TWh and 37 TWh, respectively.

Looking further ahead into 2021, if electricity demand returns to normal levels next year and a combination of strong carbon prices and competitive gas prices is present, there may be some room for additional coal-to-gas switching in OECD Europe, particularly in Germany.

### 6.1.3 CURRENT DEVELOPMENTS IN GAS CONSUMPTION

#### OECD COUNTRIES

From January to August 2020, gas consumption in the OECD, which accounts for ~46% of global gas consumption, fell by 2.8% (34 Bcm) y-o-y to 1,176 Bcm, driven by a drop in gas consumption in all OECD regions. As shown in Figure 15, the weaker demand was led by OECD Europe, followed by OECD Americas and OECD Asia Oceania.

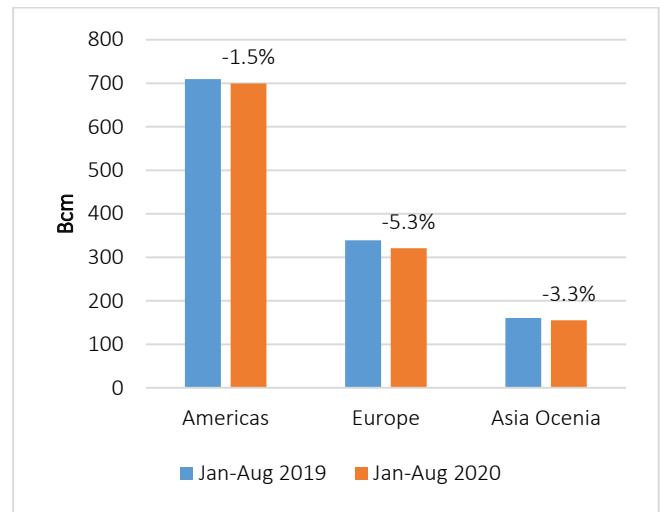
In OECD Europe, a drop in gas consumption in Italy, UK, Germany, France and Spain drove the region's gas consumption lower. Europe experienced a mild winter season, which curbed heating demand from gas and electricity. In addition, the COVID-19 restrictions implemented in several European countries contributed to a decline in consumption in the power and industrial sectors, mainly in Western Europe.

Meanwhile, the U.S. drove the decline in OECD Americas' gas consumption as the region also experienced a milder than normal winter season, which reduced gas consumption in the residential and commercial sectors. The impact of COVID-19 lockdown measures in the U.S. from March 2020 had no major impact on gas demand in the country since higher gas burn offset the decline in gas consumption in other sectors<sup>4</sup>.

Finally, in OECD Asia Oceania, a mild winter season in North East Asia eroded gas demand for heating in Japan and South Korea. In terms of the impact of COVID-19 on lockdown measures in OECD Asia Oceania, gas consumption in the power and industrial sectors has been significantly impacted.

Weaker gas demand in Japan drove the region's demand lower from January to August 2020. Despite the mild winter and COVID-19 lockdown measures in South Korea, which drove electricity and industrial demand lower, higher gas burn partially offset the decline in gas consumption between January and August 2020. The South Korean government restricted electricity generation from coal between December 2019 and March 2020, which supported the uptick in gas burn.

**Figure 15: Trend in OECD Gas Consumption from Jan-Aug 2020**



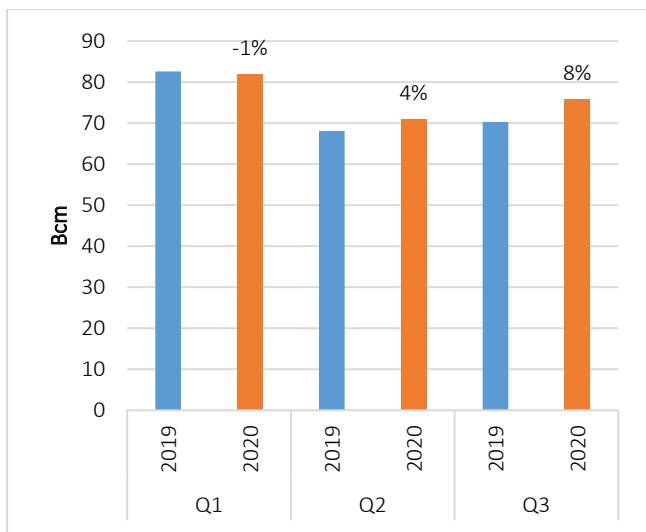
Source: GECF Secretariat based on data from IEA's Monthly Gas Statistics

## CHINA

Despite the slump in China's gas consumption in February 2020, due to the COVID-19 lockdown measures, consumption during the first nine months of 2020 grew by 3.5% y-o-y to 229 Bcm. The recovery in gas consumption in Q2 and Q3 2020 offset the drop recorded in Q1 2020 (see Figure 16). The recovery in gas consumption was driven by an extension of the winter heating season by one week in Beijing and higher urban gas consumption and stronger demand from the chemical industry. For the full year 2020, China's gas consumption is expected to grow by around 3.5-4.5% y-o-y.

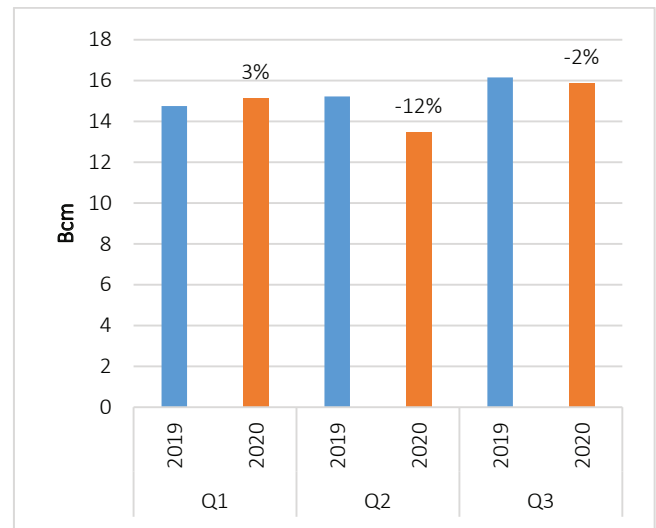
<sup>4</sup>GECF Secretariat's Report on The Impact of COVID-19 on U.S. Gas Demand and LNG Exports

**Figure 16: Trend in China's Quarterly Gas Consumption**



Source: GECF Secretariat based on data from China's Chongqing Petroleum and Gas Exchange

**Figure 17: Trend in India's Quarterly Gas Consumption**



Source: GECF Secretariat based on data from India's PPAC

## INDIA

During the first nine months of 2020, gas consumption in India stood at 44.5 Bcm, down 3.6% on the same period in 2019. As shown in Figure 17, gas consumption jumped by 2.7% to 15.1 Bcm in Q1 2020. This was driven by a surge in LNG imports as gas consumers in the fertilizer, refinery and petrochemical sectors in India capitalised on the low-priced LNG available on the spot market. However, the slump in gas consumption in Q2 2020, due to the COVID-19 lockdown measures implemented from March 2020, offset the higher gas consumption in Q1 2020. Gas consumption in the power and city gas sectors were significantly impacted by the lockdown measures. Despite the extension of lockdown measures until June 30, 2020 in some Indian states, the government eased restrictions in most of the country from the beginning of June. In Q3 2020, the pace of decline in gas consumption had slowed significantly compared to Q2 2020 and has almost returned to 2019 levels. For the full year 2020, India's gas consumption is forecast to decline by 1.5-3% y-o-y.

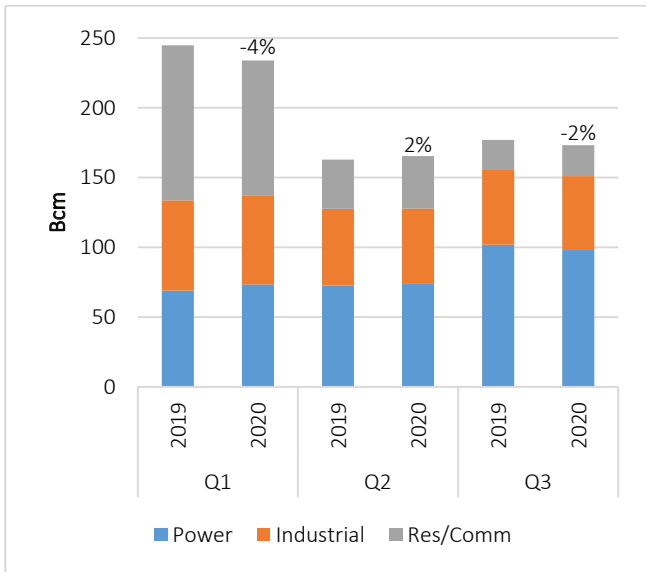
## UNITED STATES

In the U.S., gas consumption between January and September 2020 fell by 2.0% (12 Bcm) y-o-y to 573 Bcm. This was due to lower consumption across all major sectors, except the power sector, in comparison to 2019 (see Figure 18). Consumption in the residential/commercial sector dropped by 6.8% y-o-y to 156 Bcm, while gas consumption in the industrial sector was down 1.6% to 170 Bcm. In contrast, gas burn rose by 1.0% y-o-y to 246 Bcm, despite a decline in electricity demand due to the COVID-19 lockdown measures. Low gas prices in H1 2020 continue to displace coal in the power sector. Although the COVID-19 lockdown measures may have contributed to the decline in gas consumption, a relatively mild 2019/2020 winter season in the U.S. was the major driver for the drop in residential and commercial gas consumption<sup>5</sup>. Between January and April 2020, the heating degree days (HDDs) fell by 11% y-o-y, which curbed gas demand for heating. For the whole of 2020, gas consumption is expected to decline by 2-3% y-o-y driven by lower consumption in the industrial and residential/commercial sectors.

<sup>5</sup>GECF Secretariat (2020). The Impact of COVID-19 on U.S. Gas Demand and LNG Exports



**Figure 18: Trend in U.S. Quarterly Gas Consumption in Major Sectors**

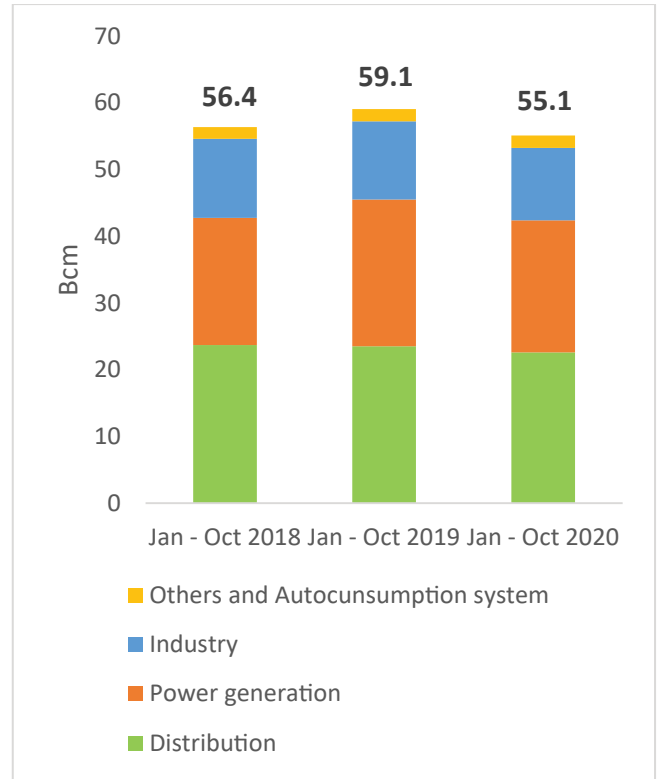


Source: GECF Secretariat based on data from U.S. EIA

## EUROPE

In Europe, where we focused only on the main gas consuming countries, Italy’s gas consumption for the period January–October 2020 dropped by 6.7 % and 2.3% compared to 2019 and 2018, respectively. The total consumption for the first ten months of 2020 reached 55.1 Bcm. The industrial, power generation and distribution sectors were down by 7.5%, 9.9% and 4.0% y-o-y, respectively. The decline in gas consumption is attributed to both the impact of the COVID-19 measures taken by the Italian government and mild weather during the period (see Figure 19). In our view, total gas consumption in Italy for 2020 is forecast to be in the best case 70.5 Bcm, which would represent a decrease of 4.5% compared to last year, but in the most probable scenario will be around 69 Bcm, a decline of 6.5% y-o-y.

**Figure 19: Y-o-Y comparison (Jan/Oct 2020) in Gas Consumption in Italy**

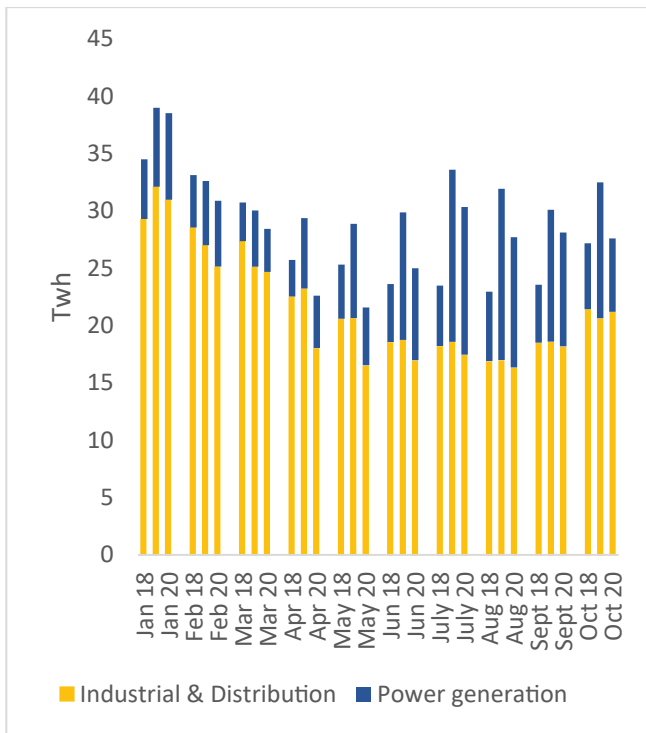


Source: GECF Secretariat based on data from Snam

In Spain, gas consumption for the period January–October 2020 dropped by 11% y-o-y to reach 291 TWh. The conventional market, which represents both industrial and distribution sectors, was down by 6.9% y-o-y. Power sector consumption recorded a decline of 21.7% y-o-y during the period, to reach a level of 75.2 TWh. The drop in consumption was mainly caused by the lockdown measures implemented by the Spanish government, which were seen as the most restrictive in Europe (see Figure 20).



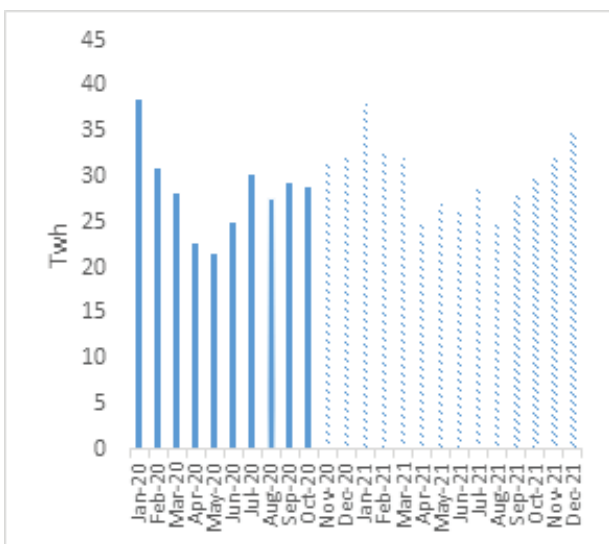
**Figure 20: Y-o-Y comparison for the Gas Consumption in Spain**



Source: GECF Secretariat based on data from Enagas

According to the data published by Enagas and our estimates, total consumption in Spain is forecast to decrease by 8%-11%. The most probable scenario, however, is a decline of 10% to reach 346 TWh in 2020. The decline in gas demand is attributed to the impact of COVID-19 on the industrial and power generation sectors coupled with higher renewable generation (Figure 21).

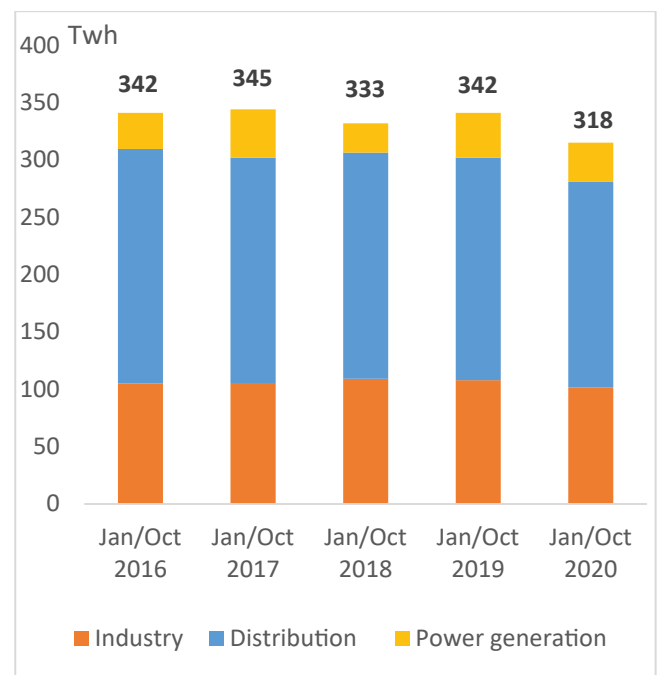
**Figure 21: Total Gas Consumption in Spain (Jan 20 - Dec 21)**



Source: GECF Secretariat based on data from Enagas

In France, as in other European countries, gas consumption for the first ten months of 2020 dropped by 7.1 % and 4.5% compared to 2019 and 2018 respectively, with a total consumption equal to 317.82 TWh. All the gas sectors were down, with the industrial, distribution and power generation sectors lower by 5.8%, 7.7% and 12.4% y-o-y respectively. The first and second nationwide lockdown measures taken by the French government were important contributors to the decline in gas consumption during that period (see Figure 22).

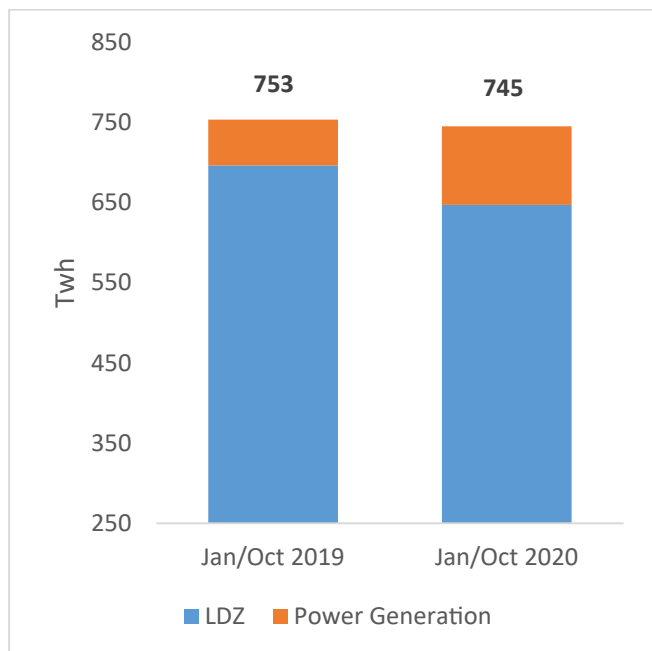
**Figure 22: Y-o-Y comparison of the Gas consumption in France (Jan/Oct for the period 2015 - 2020)**



Source: GECF Secretariat based on data from GRTgaz

In Germany, as in other countries of mainland Europe, total consumption dropped by 1.1% y-o-y during the period January-October 2020. The LDZ (distribution and industry) sector decreased by 7.1% y-o-y (49.2 TWh). By contrast, in the power generation sector, gas consumption increased due to cold weather and low gas prices that supported the use of gas. Also, gas consumption in Germany was less affected compared to other European countries, due mainly to the short period of the lockdown and the measures being less restrictive than other countries in Europe.

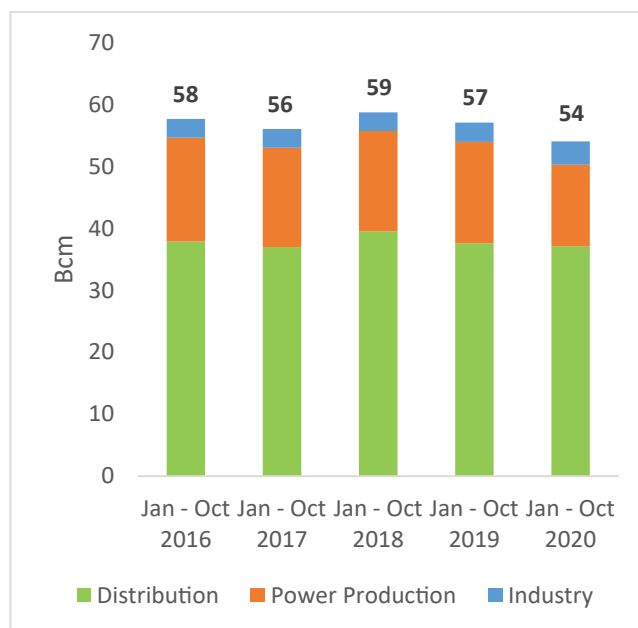
**Figure 23: Y-o-Y comparison of the German Gas Consumption (Jan/Oct for the period 2019 - 2020)**



Source: GECF Secretariat based on Refinitiv Eikon

Regarding gas consumption in the UK, total consumption for the first ten months of 2020 reached 54.2 Bcm, a decline of 6.2% and 8.5% compared to 2019 and 2018, respectively. The power generation sector was the most impacted by the COVID-19 measures taken by the government, showing a decline of 20.7% y-o-y (3.5 Bcm). The distribution sector saw a reduction of 1.1% y-o-y, while the industrial sector increased by 10.2% y-o-y for the period January-October 2020. In addition to the impact of COVID-19, the UK recorded an average temperature above the normal seasonal temperature during the first ten months of 2020.

**Figure 24: Y-o-Y comparison of the UK Gas Consumption (Jan/Oct for the period 2016 - 2020)**



Source: GECF Secretariat based on Refinitiv Eikon

#### 6.1.4 SHORT-TERM PERSPECTIVES

The following are the scenarios and assumptions used for GECF's short-term outlook for gas consumption (see Figure 12):

- Pre-COVID forecast (2-2.5% growth in global gas consumption) – GECF's 2019 estimate of gas consumption for 2020. GECF expected global weather to return to normal conditions following a mild winter in 2019. In addition, weaker economic growth in the short-term coupled with less coal-fired power retirements in the U.S., the restart of nuclear plant in Japan and easing of coal-to-gas switching in China would have contributed to the slowdown in the pace of global gas consumption compared to previous years.
- Forecast for 2020 (2-3.5% decline in gas consumption) – under this scenario, GECF estimates that between 25-30 Bcm of global gas consumption was lost due to the mild winter season. In addition, gas consumption across all regions are expected to decline. Asia could be less impacted compared to



other regions due to the quick recovery in gas demand in China. This is due to the imposition of COVID-19 restrictions, which has impacted gas demand particularly in the power and industrial sectors. However, the decline in gas consumption in H2 2020 is expected to slow compared to H1 2020. In addition, a colder-than-usual northern hemisphere winter at the end of 2020 could erase some of the gas demand lost due to the mild winter at the beginning of the year.

- Pessimistic forecast for 2021 (1.5-3% growth in global gas consumption) – this forecast is based on another mild winter season at the beginning of 2021 and 80% of the gas demand which was lost due to COVID-19 restrictions being recovered in 2021.

- Optimistic forecast for 2021 (2.5-4% increase in global gas consumption) – this forecast is based on a return to a normal winter season at the beginning of 2021 and 90% of the gas demand which was lost due to COVID-19 restrictions being recovered in 2021. Under this scenario, gas consumption is forecast to return to 2019 levels and may even surpass 2019 consumption.

Under both scenarios for 2021, developing Asian countries, particularly China and India, are expected to contribute to an increase in global gas consumption, supported by government policies in favour of gas.

## 6.2 NATURAL GAS CONSUMPTION BY SECTOR

### 6.2.1 RECENT TRENDS

#### GLOBAL

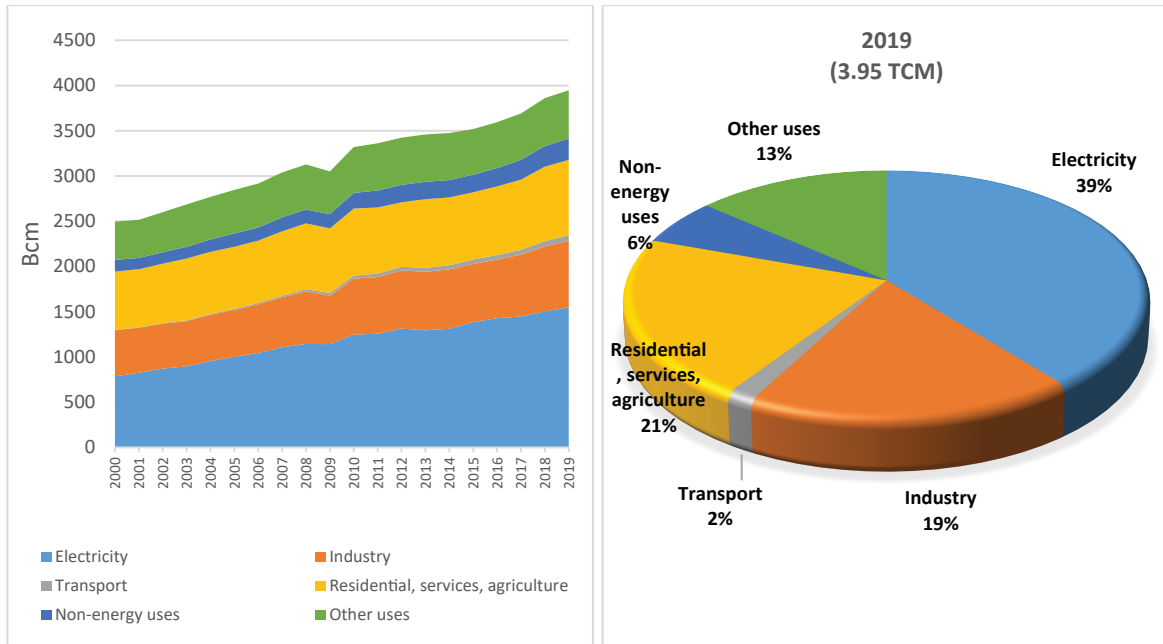
This section provides an overview of global natural gas consumption by sector with a focus on the two main consuming regions, Europe and Asia-Pacific. Analysis of data from several sources were used and benchmarked to shape the short-term outlook.

Over the past few years, global gas consumption has steadily grown, with the exception of 2009 due to the global economic recession. The share of gas in the global power generation mix increased by 7% from 2000 to 3.95 Tcm in 2019, as populations and economies grew, and with it their need for electricity and sustainable development.

In terms of sectors, global gas consumption continues to be driven by the power sector which accounted for the lion's share with 39% totalling 1.55 Tcm in 2019. This was followed by the residential sector with 21% and a total of 0.84 Tcm. The industrial sector accounted for 19% of the total gas consumption in 2019 with 0.73 Tcm. The transportation sector accounted for a mere 2% of gas consumption in 2019 or 0.06 Tcm.

International climate change policies, as well as government policies and regulations, and the price competitiveness of natural gas, are poised to support gas consumption. In the next two subsections, we will take a closer look at natural gas consumption by sector in Europe and Asia.

Figure 25: Global Natural Gas Consumption by Sector



**Note:** Other uses include district heating, energy industry own use and transmission/distribution losses  
**Source:** GECF Secretariat based on data from Enerdata ([www.enerdata.net](http://www.enerdata.net)), Cedigaz, BP Statistical Review 2020

## EUROPE

In 2019, natural gas accounted for 25% of the primary energy mix in Europe, a 1% increase y-o-y to 450 Mtoe. While the share of renewables remained steady at 4% for 2018 and 2019, it increased by 12% y-o-y. It should also be noted that the share of coal in Europe's primary energy mix increased by 9% y-o-y. Despite the push for decarbonization in this region, there are still many challenges associated with it.

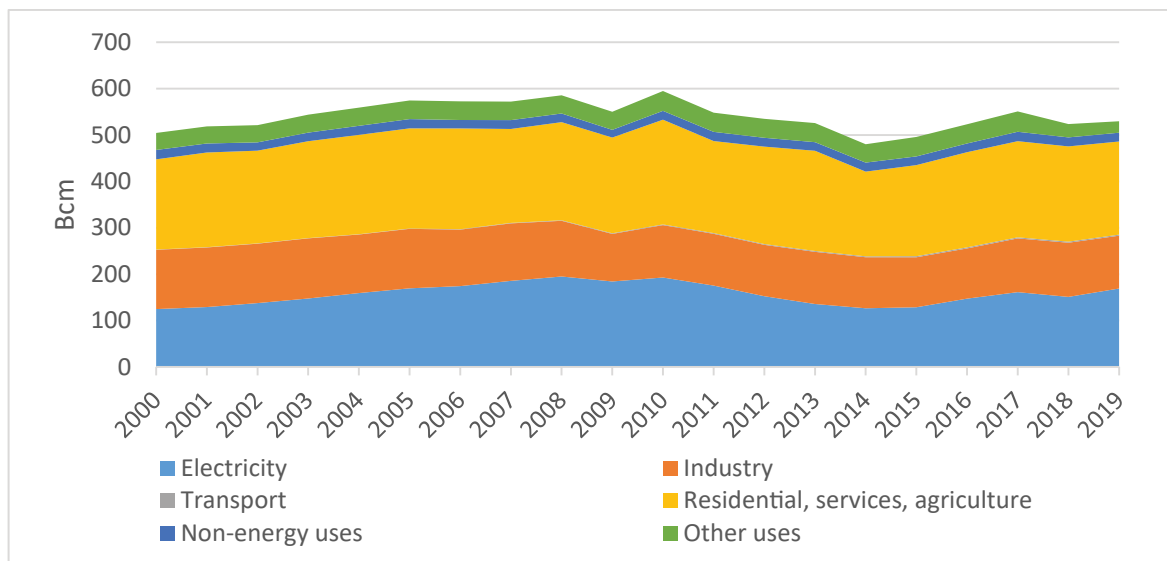
Europe, after recording a continuous modest growth since 2014, saw its gas consumption weaken in the second and third quarters of 2018, due to higher hydro levels when compared to 2017, higher nuclear reactor availability after the shutdown experienced in France in 2017, and multi-year low levels of storage. Europe acted as a sink for excess LNG in an oversupplied market in 2019 with storage levels reaching record highs.

In 2019, total natural gas consumption only increased by 1% y-o-y to 530 Bcm in Europe. Natural gas consumption across all sectors was relatively stable or showed a slight decline except for the power sector where gas consumption increased by 12% y-o-y.

Gas consumption in Europe is highly dependent on the residential sector which accounted for 38% (201 Bcm), followed by the power sector with 32% (169 Bcm) and industry with 21% (114 Bcm) in 2019.

As energy policies and regulations in Europe continue to have a strong environmental focus, there has been a steady decline in coal-fired power generation. In addition, we continue to expect further coal and nuclear power plant phase-outs in the short- to medium-term. This is expected to support natural gas and renewables consumption in the power sector as they work hand-in-hand to provide a clean, stable electricity source.

**Figure 26: Europe's Natural Gas Consumption by Sector**



**Note: Other uses include district heating, energy industry own use and transmission/distribution losses**  
**Source: GECF Secretariat based on data from Enerdata ([www.enerdata.net](http://www.enerdata.net)), Cedigaz, BP Statistical Review 2020**

## ASIA-PACIFIC

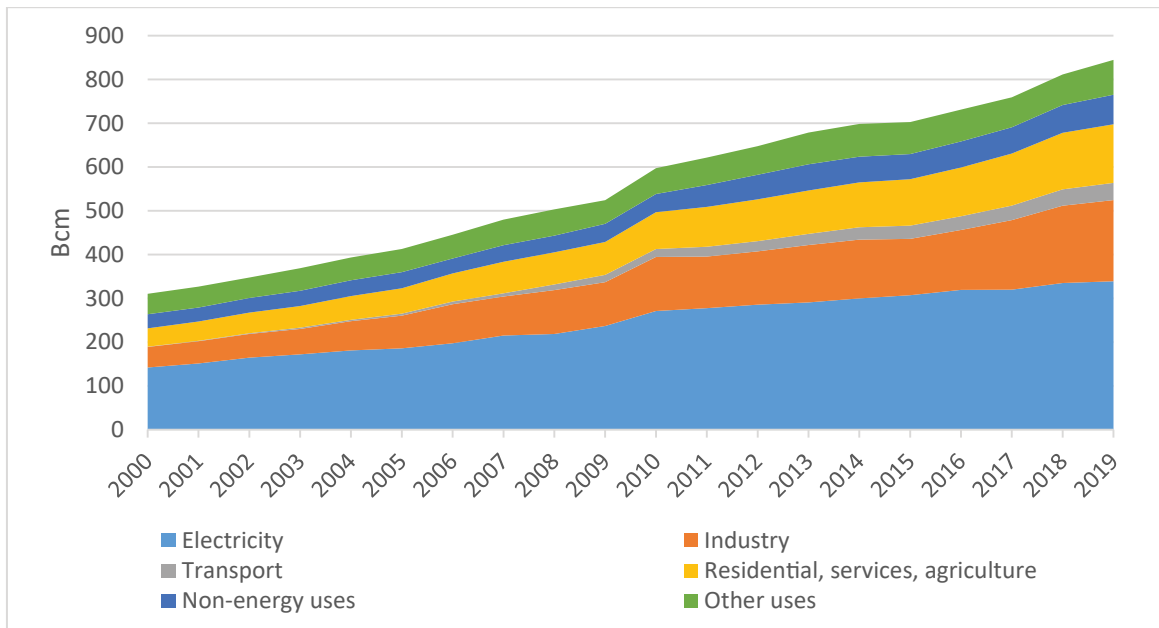
In Asia-Pacific, natural gas only accounted for 11% of the primary energy mix, a 5% increase y-o-y. Its main competitor, coal, accounted for almost half of the primary energy consumption with 47%, but was relatively stable y-o-y. While coal continues to be the dominant fuel in this region due to its abundance and low price, natural gas has been penetrating the industrial and residential sectors.

In 2019, total gas consumption increased by 4.1% y-o-y to 845 Bcm. In this region, natural gas is consumed primarily in the power sector which accounted for 40% (339 Bcm), followed by

industry with 22% (185 Bcm) and residential with 16% (134 Bcm).

However, gas consumption by sector varies significantly across the countries. In China for instance, gas is mainly utilized in the industrial sector. While, in India, gas consumption is more dominant in the non-energy sectors such as a feedstock for fertilizers.

**Figure 27: Asia-Pacific's Natural Gas Consumption by Sector**



**Note: Other uses include district heating, energy industry own use and transmission/distribution losses**  
**Source: GECF Secretariat based on data from Enerdata ([www.enerdata.net](http://www.enerdata.net)), Cedigaz, BP Statistical Review 2020**

## 6.2.2 SHORT-TERM PERSPECTIVES

In 2020, global gas consumption is expected to decline by 2-3.5% depending on the extent of the second round of lockdown measures and weather conditions. Mild winter conditions in the first quarter resulted in lower heating demand in the residential sector. On top of this, implementation of lockdown measures in Europe negatively impacted demand in the commercial sector. In Asia, gas plays a more significant role in the industrial sector. Thus, slower manufacturing activity due to lockdown measures weighed heavily on gas consumption in the region. While there has been some recovery in demand in these sectors in the second half of 2020, the downward trend in consumption for 2020 will likely be largely attributed to the power and industrial sectors.

In the mid- to long term, gas consumption in the transportation sector is expected to increase driven by the expansion of niche markets including natural gas vehicles (NGVs), LNG-fueled trucks, CNG light vehicles and LNG

as a bunker fuel. In addition, technological advancements in terms of increased efficiency of combined-cycle gas turbines, digitalization and CCUS will also support its role in achieving climate targets.

In the short term, gas consumption in the power sector is expected to increase as competitive gas and LNG prices make it more attractive than competing fuels such as coal and renewables. The combination of low gas prices and high carbon prices are expected to incentivize coal-to-gas switching in Europe. In addition, coal and nuclear power plant phase-outs are expected to boost demand for natural gas in the power sector. However, competition from renewables may dampen its penetration, particularly in Europe. In Asia-Pacific, government policies to improve air quality along with competitive gas and LNG prices are expected to boost natural gas consumption.

## 6.3 NATURAL GAS CONSUMPTION IN THE POWER SECTOR

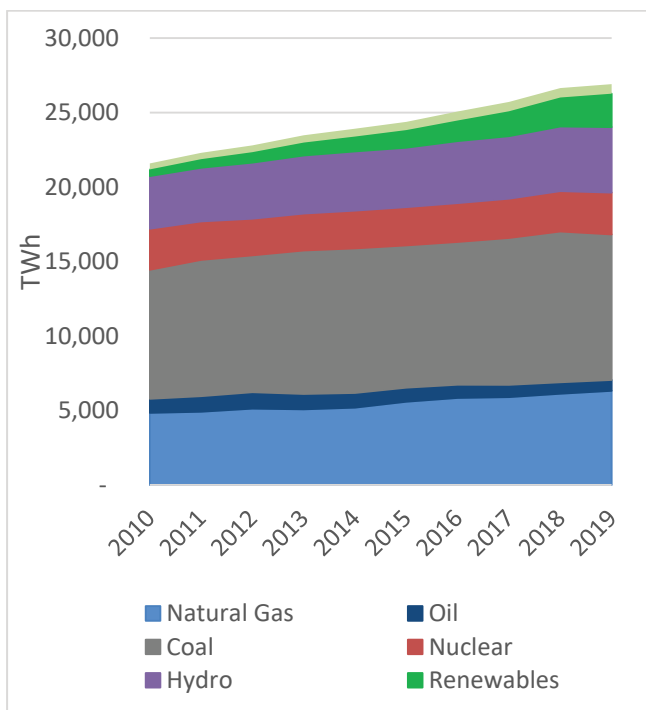
### 6.3.1 RECENT TRENDS

#### RECAP OF 2019

The trends in the global power generation mix with a focus on natural gas consumption in the power sector was analysed on a global and regional basis in this section. Analysis of data from several sources were employed together with relevant policy decisions to shape the short-term outlook.

The power sector continues to drive global natural gas demand and accounted for 39% of global natural gas consumption in 2019. Global energy demand in the power sector totalled 26,906 TWh in 2019, an increase of 1% y-o-y. Natural gas consumption in the power sector was 6,324 TWh in 2019, a 3.2% increase y-o-y. Renewables experienced the largest annual growth with a 15% increase to 2,241 TWh, while coal and oil declined from the previous year.

**Figure 28: Global Power Generation Mix**

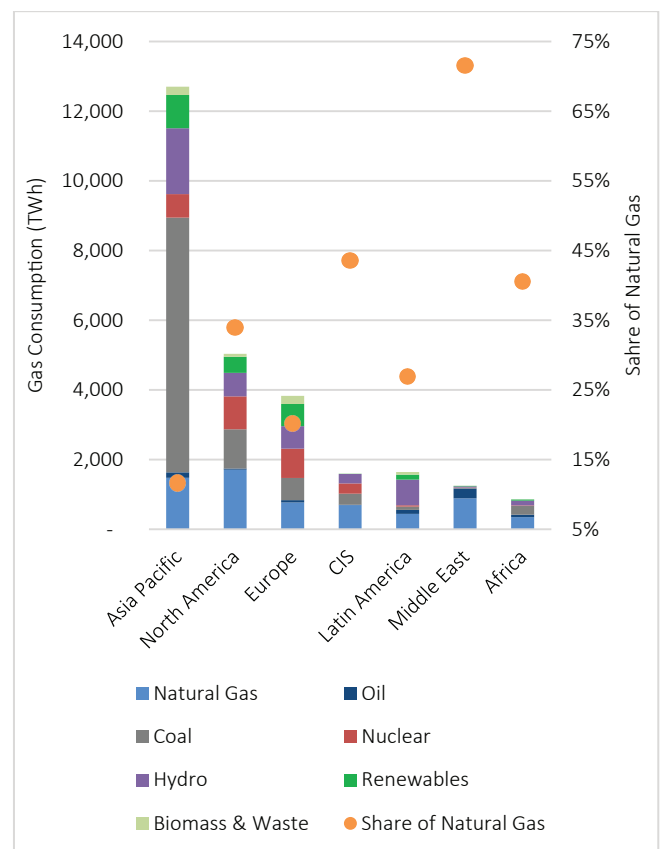


Source: GECF Secretariat based on data from Enerdata ([www.enerdata.net](http://www.enerdata.net)), IEA

Coal-fired generation continues to dominate the power sector, accounting for 36% of fuel consumption in 2019. The second largest share came from gas-fired generation at 24%, an increase of 2% from its share in 2010.

As seen in Figure 29 below, each region has developed its unique power generation mix due to many different factors including, but not limited to, availability of resources, cost of competing fuels, regulatory frameworks, subsidies, environmental policies and available technology. Consequently, the share of gas also varies with the highest share in the Middle East and the lowest in the Asia Pacific region.

**Figure 29: Power Generation Mix by Region 2019**



Source: GECF Secretariat based on data from Enerdata ([www.enerdata.net](http://www.enerdata.net)), IEA



## NORTH AMERICA

North America had the largest natural gas demand in the power sector in 2019 with a total of 1,708 TWh, or 34% of its total power generation, representing an 8% increase from the previous year.

In 2018 gas consumption in the power sector was primarily driven by weather conditions where colder winter and hotter summer temperatures required higher demand for heating and cooling, respectively. In contrast, its demand in 2019 was mainly due to the boost in gas-fired power generation as coal-fired plants were phased out. In 2019, approximately 15,100 MW of coal power plants were either shut down or converted to gas, the second largest year for closures (with 19,300 MW in 2015 being the fastest).

## ASIA PACIFIC

The Asia Pacific region had the second highest gas consumption in the power sector with 1,474 TWh in 2019, which accounted for 12% of the power generation mix. There was only a slight increase of less than 1% y-o-y. This was mainly driven mainly by China and India as a result of government policies to improve air quality in major cities.

In 2018, gas consumption for electricity in China was a mere 3%. However, this is expected to increase with government policies such as the Blue Sky Policy (2018-2020). This plan involved several initiatives including a phase-out of old coal-fired plants with a capacity below 300 MW, construction of gas supply infrastructure and storage, and the prioritization of new gas projects in urban cities.

However, in 2019, gas demand in China was lower than expected due to slower economic growth and a greater push towards the implementation of Clean Coal Technologies (CCTs) which generally take the form of improving plant efficiency,

coal conversion, emissions control and carbon capture, utilization and storage. China has been leading the way in research and development of CCTs in order to reduce emissions from coal-fired power plants. Data from China's National Energy Administration (NEA) showed that over 80% of the installed coal-fired power plant capacity had achieved ultra-low emissions at the end of 2018.

While gas-fired power generation remains superior to CCTs in terms of reducing emissions, coal is expected to continue to play a major role in meeting China's power generation requirements. This may be due to several reasons linked to energy security concerns and price fluctuations in other commodities, social/political issues due to job creation from coal plants, as well as a greater focus on improving air quality rather than reducing emissions.

In 2019, the share of gas in India's power sector was approximately 5%, while coal accounted for about 73% of its power generation mix. While India is in active discussions to expand its LNG import volumes with countries such as Russia and Australia, this increased gas consumption will be seen in the industrial sector rather than the power sector.

The restart of four nuclear reactors in Japan in 2018 saw the country's total nuclear electricity production rise to a high of 52.7 TWh, from zero nuclear production in 2014. Consequently, gas consumption in the power sector decreased by 7% to 388 TWh over the same period. While gas continues to be the dominant fuel source in Japan, the future of gas in Japan is uncertain. There were nine reactors in operation at the end of 2019, which are owned by Kansai Electric Power Company (4), Kyushu Electric Power Company (4) and Shikoku Electric Power Company (1). While some have been given approval by the Nuclear Regulation Authority (NRA) to restart operations, others must meet deadlines for anti-terrorism modifications to existing facilities in order to obtain approval.



## MIDDLE EAST

In the Middle East, natural gas maintained its leading role accounting for 72% in 2019 or a total of 888 TWh, representing an increase of only 0.5% y-o-y. However, there is expected to be robust demand growth in this region due to rising populations and increasing requirement for cooling as well as desalination.

While natural gas dominates in the power sector in this region, there have been increasing efforts to diversify the energy mix through renewables, in particular large solar PV projects. In 2019, the share of renewables in the power generation mix stood at a mere 1% (excluding hydro). However, many countries in the region have set ambitious renewable energy targets in the short term, for instance Saudi Arabia has a goal of generating 9.5 GW of clean energy by 2023.

## EUROPE

In 2019, the share of natural gas in Europe's power sector stood at 770 TWh or 20% of its power generation mix, with renewables, coal and hydro accounting for 17% each. Nuclear power had the dominant share with 22%.

Natural gas consumption in the power sector increased 7% y-o-y while renewable power generation increased 13% y-o-y. This was due to a combination of a greater policy push for cleaner energy sources, improved technology, reduced cost and the need for energy security.

In 2019, coal and nuclear plants accounted for 17% and 22% of Europe's power generation, respectively. This is expected to decrease in the next few years, and is already being observed as some of these plants are phased out. The UK has been making strides towards achieving net-zero emissions and in 2019 recorded its first year where non-fossil fuels accounted for a higher power generation capacity than fossil fuels.

## CIS

Natural gas continues to dominate the power generation mix in the CIS region, and accounted for 695 TWh or 44% in 2019. This share has remained relatively stable since 2010. However, natural gas consumption increased by 6% compared to 2010, while oil declined by 43%, and hydro increased by 13% over the same period.

Due to the abundance of resources in the region, natural gas is expected to continue to play a leading role in the power generation mix in the region.

## LATIN AMERICA

Hydro accounts for the lion's share of power generation in this region and stood at 738 TWh in 2019 or 45%. Natural gas accounted for 441 TWh or 27%, which represented a 2% increase y-o-y. Renewables held the third largest share with 9%, but there was a significant increase of 41% y-o-y, accompanied by a decrease in the share of oil by 9% y-o-y.

This marked shift to cleaner fuels for power generation can boost natural gas demand in the region as it will be needed to provide backup supply for intermittent renewables and to support the substitution of oil and oil products.

## AFRICA

Africa accounts for the smallest regional power generation with a total of 856 TWh in 2019, despite having the second largest population, due to low electricity access in the region. Natural gas accounts for 41% of the power generation mix which was 347 TWh in 2019.

Power generation in Africa has increased by 28% from 2010, with natural gas accounting for most of the incremental generation and increasing by 56% from 2010 to 2019.

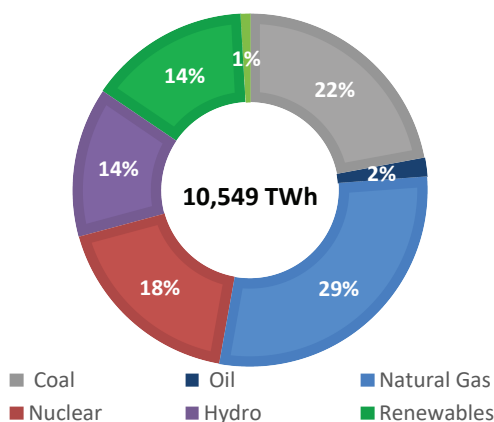
Africa's electricity demand is set to increase, driven by a growing population and increasing access to electricity. Thus, there is a huge potential for additional natural gas consumption in its power sector.

## OECD

In 2019, there was an increase in total natural gas consumption in the power sector in OECD<sup>6</sup> countries by 5% (or 138 TWh), compared to the previous year. The share of natural gas increased by 2% to 3,058 TWh, while that of renewables increased by 1% to 1,549 TWh. The share of coal decreased by 3% to 2,329 TWh. These changes can be attributed to rising public concerns over CO<sub>2</sub> emissions and the implementation of global climate change policies. In the short term, we expect natural gas and renewables to continue to grow while coal declines.

However, the growing popularity of clean coal technologies may reduce the magnitude of coal's decline, particularly in China which has been one of the pioneers of CCTs. Furthermore, the US Department of Energy announced federal funding of up to 64 million USD for its Coal FIRST (Flexible, Innovative, Resilient, Small, Transformative) Power Plants of the Future which will focus on reducing emissions from coal-fired power plants.

**Figure 30: OECD Power Generation Mix 2019**



Source: GECF Secretariat based on IEA data from the IEA (2020) Monthly Electricity Statistics. <https://www.iea.org/reports/monthly-electricity-statistics>. All rights reserved; as modified by Gas Exporting Countries Forum (GECF).

<sup>6</sup>OECD includes Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, the Slovak Republic, Slovenia, Switzerland, Turkey, the United Kingdom and the United States.

Natural gas accounted for the highest share in OECD Americas totalling 35% in their power generation mix, with an increase of 8% y-o-y driven by an abundant supply of natural gas. This was followed by coal which accounted for 21%.

In the OECD Asia/Oceania region, coal accounted for the highest share with 38% of the power generation mix, with the major contributors being Australia and South Korea, followed by natural gas with 29%. On the other hand, renewable energy showed the largest increase y-o-y, increasing by 20% to 185 TWh.

OECD Europe led the coal phase-out showing a 22% y-o-y reduction in coal-fired power to 537 TWh driven by a strong push towards reducing its greenhouse gas emissions.

Furthermore, coal-to-gas switching due to a combination of low gas prices and high carbon and coal prices in Europe, resulted in an increase in gas consumption for power by 6% y-o-y to 708 TWh in 2019.

Over the first eight months of 2020, total OECD power generation was 6,874 TWh which was 3% lower y-o-y. Natural gas accounted for 30% (2,038 TWh) of the power generation mix. There was a major drop in coal-fired generation by 18%, while renewables increased by 11%. In all regions considered, total power generation was lower y-o-y, and that from renewables increased while that from conventional thermal sources decreased. Figure 31 below illustrates the power generation mix in OECD countries by region over the period January-August 2020, as well as the corresponding shares of natural gas in the mix.

Coal-fired generation continued to fall in OECD Americas which recorded a 23% decline y-o-y to 585 TWh mostly driven by lower demand due to a mild 2019/20 winter and the impact of COVID-19 lockdown measures. Power

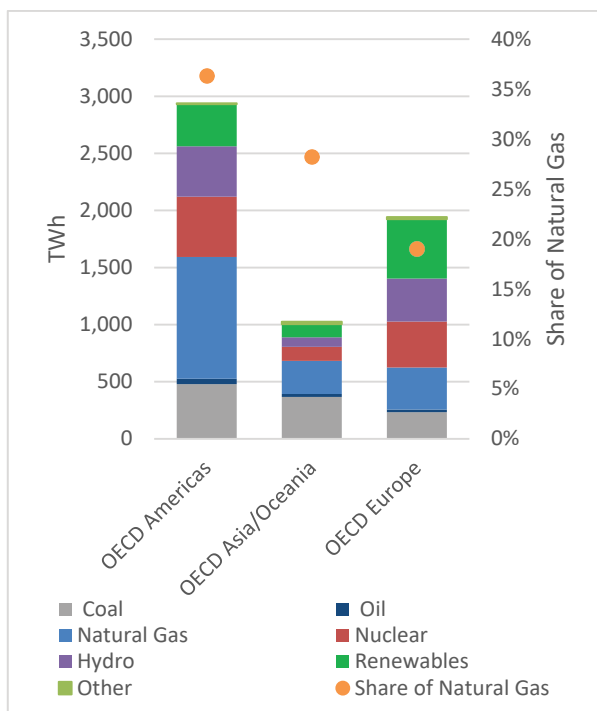


generation from natural gas increased by 5% to 1,270 TWh, mirroring trends in the US where gas-fired generation increased by 6% y-o-y likely due to coal power plant phase-out. Coal-fired generation dropped by 24% in the US.

In OECD Asia/Oceania, total power generation was down 5% y-o-y reaching 1,180 TWh in the first eight months of 2020. In South Korea, coal-fired generation declined by 9% y-o-y to 133 TWh. In Australia, renewables increased its share in the power generation mix driven by wind which increased around 13% y-o-y to 14 TWh.

In OECD Europe, power generation was particularly affected as there was significantly lower industrial and commercial activity. Coal-fired generation decreased by 23% to 270 TWh, while the share of renewables increased by 12% to 584 TWh. Natural gas accounted for 20% of the power generation mix but fell by 7% y-o-y.

**Figure 31: OECD Power Generation Mix by Region**



Source: GECF Secretariat based on IEA data from the IEA (2020) Monthly Electricity Statistics. <https://www.iea.org/reports/monthly-electricity-statistics>. All rights reserved; as modified by Gas Exporting Countries Forum (GECF).

### 6.3.2 SHORT TERM PERSPECTIVES

Gas is expected to increasingly displace coal in the next few years, particularly in Asia and Europe. The driving factors in Asia will revolve around environmental concerns, in particular reducing air pollution. In Europe, gas demand in the power sector will be supported by coal and nuclear phase-outs in alignment with the European Commission's Green Deal.

Such government policies aimed at decarbonisation are also likely to further dampen gas demand in Europe in the medium term. However, continued low gas prices coupled with high carbon prices will favour coal-to-gas switching and thus an increase in gas demand in the short term.

It should be noted that over the period 2019-2024, seven coal and five nuclear power plants in Europe are expected to be decommissioned. In addition, the federal cabinet of Germany signed off a bill in June 2020 to abandon nuclear energy by 2022 and to phase-out coal-fired power generation by 2038.

This will mean finding an alternative energy source for 47 GW of capacity. The increased affordability of natural gas and reduced cost of renewable energy is expected to replace coal and nuclear power plants.

In Japan, the Kansai Electric Power Co. has decided to suspend the operation of the Takanama No. 3 reactor which was expected to be down from August 2, 2020. However, damage to a steam generator has resulted in this reactor remaining offline from January 6 until December 22, 2020. The Takanama No. 4 reactor is scheduled to be offline from October 7, 2020–February 10, 2021 for facility upgrades. Kyushu Electric Power Co. shut its 890 MW Sendai No. 1 reactor on March 16, 2020 to install anti-terrorism facilities and is anticipated to resume operations on December 26, 2020. The Sendai No. 2 reactor stopped operations in May 2020 for a period of eight months.

Japanese nuclear generation is expected to decline in the coming months to below 2 TWh in November 2020, as a result of the shutdown of these nuclear reactors. This is expected to increase the call on LNG imports this year. Furthermore, Japan Petroleum Exploration (Japex) commissioned the first unit of the Fukushima gas-fired power plant on April 30, 2020 with a capacity of 1.18 GW from two units, which will boost gas demand.

Another factor that is likely to affect gas demand in Japan is the power sector reforms which were completed on April 1, 2020. There was an unbundling of the electricity system in which power generators will not be allowed to operate in the transmission and distribution system, which will allow new market entrants. This will increase competition and may open the market to power generation from more renewables.

In July 2020, Japan announced its new energy policy to shut down less efficient coal plants over the next ten years, with up to 100 coal power plants being mothballed or shut down by 2030. Furthermore, Japex started operations at its 1.18 GW Fukushima Natural Gas Power Plant which is expected to require about 200,000 mt of additional LNG over the period April 2020–March 2021. The second 590 MW CCGT unit started commercial operations in August 2020.

Gas demand in the Vietnamese power sector is expected to significantly increase as three LNG import terminals and four gas-fired power plants are expected to come online between 2023–25, with a generating capacity of 7.1 GW.

Hong Kong intends to increase its gas-fired capacity from March 2022 via the construction of a 4 mt/yr offshore LNG import terminal which will be connected to existing power plants.

South Korea's state electricity firm Korea Electric Power Corporation (Kepco) plans to continue to reduce its coal-fired generation through a series of closures and conversions to gas-fired power

plants. The country's draft Ninth Basic Electricity Plan outlines plans to shut 15.3 GW of coal-fired plants by 2034, almost half of the total 33.7 GW across 56 plants. In addition, 24 of these plants are expected to be converted to gas-fired plants. However, 7 new coal plants are also under construction. There are also expected to be operating restrictions being put in place to reduce fine dust emissions.

There has been a push from the government to increase the share of renewables and hydrogen in the country's power mix as announced in its 'Green New Deal' in July 2020. However, the related cost presents a great hurdle, as well as political uncertainty.

According to the EIA's Short-Term Energy Outlook (STEO) from November 2020, demand for power generation in the U.S. is forecast to be 3.6% lower y-o-y largely due to reduced commercial and industrial activity, as well as mild weather conditions. However, the share of gas in the power generation mix is still expected to increase from 37% in 2019 to 39% in 2020. However, it is expected to decline to 33% as gas prices recover in 2021.

While lockdown measures have challenged gas consumption in the power sector, it did rebound as these measures are lifted and economic activity resumed. However, the second round of lockdown measures, although less restricted may dampen gas demand. The full impact will ultimately depend on how long this pandemic lasts and the measures governments put in place for economic recovery.

In the short/medium term, the share of natural gas in the power sector is expected to grow particularly in Europe and Asia as it gains momentum in existing markets and penetrates emerging markets, to meet the energy needs of growing populations and improve air quality.

GECF Member Countries, major suppliers of natural gas and LNG to the world, will continue to accompany such expansion of natural gas and



respond to the calls upon it wherever it occurs, thanks to the resilience of their supply systems and their competitive advantage.

## 6.4 NATURAL GAS CONSUMPTION IN THE TRANSPORTATION SECTOR

### 6.4.1 RECENT TRENDS

The transportation sector, mainly automotive and shipping industries, has been emerging as a new major consumer of natural gas.

### NATURAL GAS VEHICLES (NGVS)

There are two types of NGVs: 1) vehicles operating on compressed natural gas (CNG), most of them being passenger cars; 2) vehicles operating on liquefied natural gas (LNG), most of them being commercial trucks.

In 2019, global NGV sales reached 2.0 million, with the global fleet amounting to 28.5 million vehicles, led by China, Iran and India.

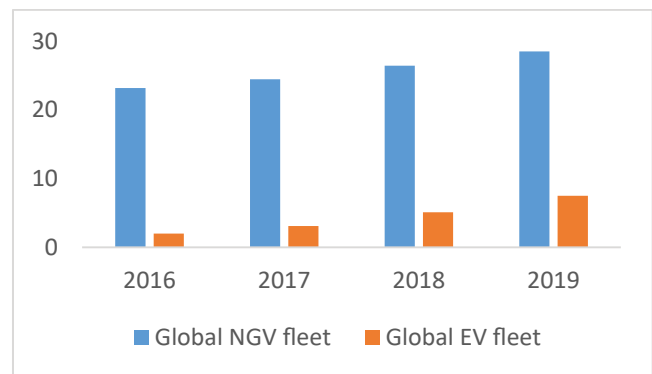
Emerging markets represent the major part of global NGV sales. Asia Pacific countries have 20.5 million NGVs, Latin America 5.5 million and Africa 0.3 million.

Meanwhile, the share in developed countries is not so high. Today, there are only 0.2 million NGVs in North America and 2.1 million NGVs in Europe. However, various developed countries have put a special emphasis on promoting LNG trucks and expanding the appropriate fuelling infrastructure. Given lower emissions and less noise, LNG is an ideal alternative to diesel in road freight transportation.

As far as the GECF's interests are concerned, MCs could promote NGVs on their national markets, with special focus on CNG passenger vehicles and LNG trucks, while expanding the relevant CNG and LNG fuelling infrastructure. Given the lower cost of natural gas, NGVs will remain competitive compared to internal combustion engine vehicles on these markets.

Currently, NGVs face growing competition with electric vehicles (EVs). In 2019, global EV sales reached 2.3 million, with the global fleet amounting to 7.5 million vehicles and China and the U.S. being the leaders. The global EV market growth was impressive from 2016 to 2018, with the average annual sales growth rate reaching 63%. However, in 2019 the sales growth rate fell to 9%. On the one hand, EVs still represent a small share of global vehicle sales, with only 2.5% share in 2019. On the other hand, EVs might become a real game changer, mainly in the developed countries and China, if sales growth rates rebound to the pre-2019 level (Figure 32).

**Figure 32: Global NGV Fleet vs EV Fleet (Million vehicles)**



Source: GECF Secretariat based on data from OECD/IEA, EVvolumes.com, NGV Global

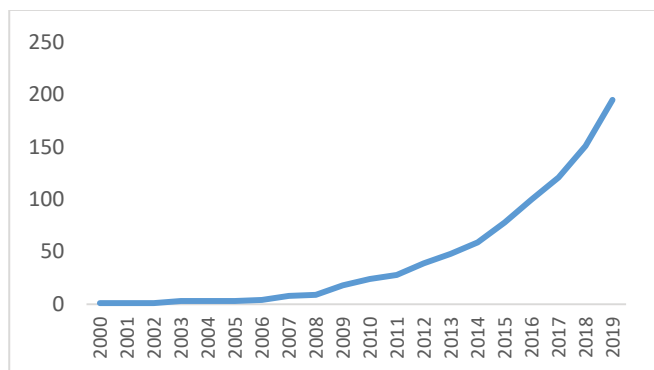
EVs are expected to gain market share mainly from internal combustion engine vehicles and ultimately displace potential gasoline and diesel consumption. It is also important to take into account the origin of the electricity feeding EVs. The growing demand for energy, required to charge EVs, might further spur demand for natural gas from power plants.

### LNG BUNKER FUEL

As of the end of 2019, there were 195 LNG-fuelled vessels (excluding LNG carriers) in the world, representing only a minor share of the shipping market (Figure 33). Of that amount, 182 were newbuilt vessels and 13 were retrofitted vessels. Among various types of vessels, the most popular were as follows: car-pax ferries

(54), platform supply vessels (23), passenger ferries (22), and tugboats (16).

**Figure 33: Global LNG-Fuelled Vessels (Excluding LNG Carriers)**



Source: GECF Secretariat based on data from Argus

However, taking into account the exponential growth of LNG-fuelled vessels (a record 44 vessels were commissioned in 2019) and the current number of vessels on the orderbook (around 200 vessels), it is becoming evident that LNG is emerging as an important fuel for the shipping industry. It has every chance of turning from a niche market into a major market. The success of LNG bunker fuel penetration in the global shipping industry will depend on a set of regulatory and economic driving forces and challenges.

The key regulatory driver is the stricter global environmental policy designed to reduce or control traditional air emissions. With the International Maritime Organization (IMO) introducing a new sulphur cap of 0.5% starting from 2020 (compared to the previous 3.5% limit), demand for LNG bunker fuel is expected to rise, since LNG enables almost complete reduction of sulphur oxide emissions and a very significant reduction of NO<sub>x</sub> and CO<sub>2</sub> emissions. The stricter sulphur regulations, already valid in the Emission Control Areas in Europe and the U.S., have generated multiple orders for LNG-fuelled vessels operating in coastal trades. In this context, starting from 2020 the growth of LNG

bunker fuel consumption will become not only a regional, but also a global trend.

The key regulatory challenge is to mitigate negative impacts of LNG-fuelled shipping. The carbon footprint, attributable to the gas industry chain, reduces the environmental advantages of LNG bunker fuel. Given the continuing pressure on the shipping industry to improve its carbon footprint, ship owners may prefer to wait for new lower-carbon options.

The key economic drivers are high LNG bunker fuel availability and price competitiveness of LNG compared to oil-based bunker fuels. The key economic challenges are the high cost of retrofitting conventional ships to use LNG bunker fuel and the high cost of building the relevant infrastructure.<sup>7</sup>

#### 6.4.2 SHORT TERM PERSPECTIVES

In 2020, NGV sales may slow because of lockdown measures related to the COVID-19 pandemic and falling oil prices, which have made the attractiveness of LNG fuel prices compared to oil fuel prices less evident. However, starting from 2021 we could expect steady sales growth recovery, with 2 million NGVs sold annually.

A consistent increase in the number of LNG-fuelled vessels and LNG bunker fuel consumption may be expected, driven by new IMO regulations. The growth is unlikely to be significant in the short term because of the limited number of vessels on the order book, however in the medium term the growth may accelerate as LNG bunker fuel infrastructure develops. Despite a drop in oil prices in early 2020, LNG bunker fuel remains economically competitive over oil fuels.

GECF Member Countries have every opportunity to become drivers in NGV sales and LNG bunker fuel consumption on the global level.

<sup>7</sup>GECF Secretariat. (2018). Expert Commentary - The Global LNG Bunker Fuel Market: the Current State and Prospects.

# 07

## NATURAL GAS SUPPLY





## 7 NATURAL GAS SUPPLY

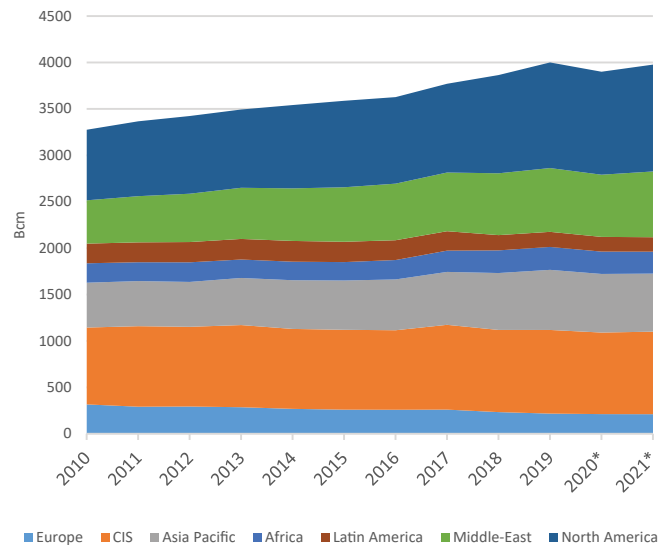
### 7.1 NATURAL GAS PRODUCTION

#### 7.1.1 RECENT TRENDS

Global natural gas production in 2019 rose by 3.5%, to stand at ~4 Tcm, which is around 136 Bcm higher than in 2018, as indicated in Figure 34. This is well above the average growth rates of 2010-2018 (~2.3%). The increase in global production in 2019 was driven by the U.S. (87 Bcm), Australia (23 Bcm), China (15 Bcm), Iran (13 Bcm), Russia (11 Bcm), and Egypt (7 Bcm), and was supported by increasing pipeline gas and LNG exports and domestic gas consumption, which incentivized further development of new gas fields. On a regional basis, North America and Asia Pacific were the dominant sources of global gas production growth at 7.5% and 5.6%, respectively, in 2019. In terms of volumes, North America, CIS, and the Middle East with 1,138 Bcm, 901 Bcm, and 687 Bcm respectively had the highest production level among the regions.

The COVID-19 pandemic affected natural gas production in 2020 due to its impact on upstream activities, service companies and personnel on-site. In addition, weak demand reduced the appetite of upstream companies to invest as they cut spending and staffing levels also due to low oil and gas prices. It is expected that in addition to equipment manufacturing shutdowns and supply chain restrictions, office closures at some upstream companies will delay upstream projects.

**Figure 34: Natural Gas Production by Region**

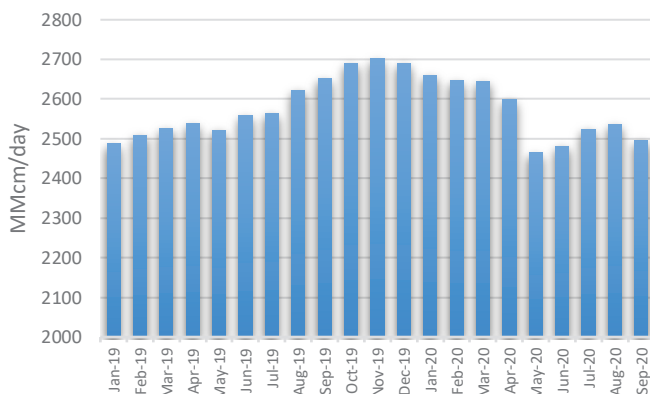


Source: GECF Secretariat based on data from Cedigaz, Enerdata ([www.enerdata.net](http://www.enerdata.net))  
 (\*) GECF's forecast for 2020 and 2021

## AMERICAS

The U.S. took the top position in global natural gas production growth due to increasing shale gas production. Its natural gas production increased by 10% in 2019 y-o-y to reach 952 Bcm supported mainly by shale gas. Also, based on preliminary data, U.S. dry natural gas production in 2020 declined from 2,659 MMcm/day in January to 2,494 MMcm/day by September 2020. The decline in the U.S. dry natural gas production was mostly due to the impact of the COVID-19 pandemic on markets and low prices of natural gas, which discouraged producers from producing more gas.

**Figure 35: Dry Natural gas production trend in the US (Monthly Average)**



Source: GECF Secretariat based on data from Refinitiv, and EIA

Argentina, meanwhile, is aiming to increase domestic natural gas production and reverse the declining trend from recent years. While production fell from 42 Bcm in 2010 to 39 Bcm in 2013, the trend has since been reversed and production levels rebounded to 42 Bcm in 2019. In 2014, Argentina's government passed a law to encourage foreign investment in unconventional fields. According to projections by Argentina's government, the production level will be doubled in the next five years. YPF as the main player in Vaca Muerta expects 20% annual production growth from the basin between 2019 and 2023.

To realize the above-mentioned production target, massive investment is required in Vaca Muerta, to build the infrastructure, including the pipeline and underground storage facilities. Argentina's government is looking for potential investors to create the required infrastructure through cooperation with other countries. However, the COVID-19 pandemic in addition to economic indicators in Argentina indicate that the government's plan to increase production from Vaca Muerta by 20% annually may be challenging.

## CIS

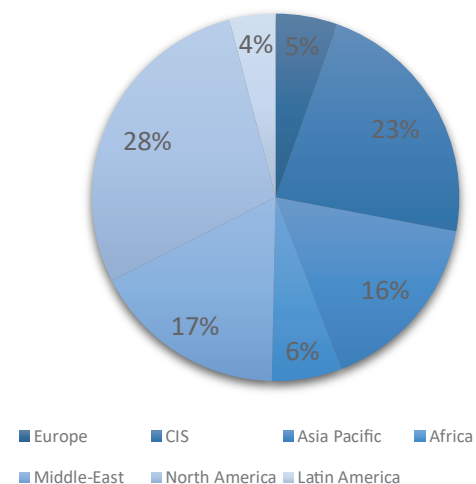
Natural gas production in CIS countries rose by 1.8% to 901 Bcm in 2019, which is around 16 Bcm higher than in 2018. The increase in CIS

production was driven by Russia (11 Bcm), Azerbaijan (5 Bcm), and Turkmenistan (2.3 Bcm). The increases were due to higher pipeline gas and LNG exports, and domestic gas consumption, supported by production from brownfields as well as the development of new fields. Natural gas production growth in Azerbaijan was due to the commissioning of the Shah Deniz phase 2 project, while growth in Kazakhstan was supported by higher production at the Kashagan field.

## MIDDLE EAST AND AFRICA

Total Middle East natural gas production increased by 21 Bcm to 687 Bcm in 2019 representing 17% of global natural gas production, as indicated in Figure 36. It should be noted that 60% of the total incremental natural gas production in the Middle East came from Iran in 2019. The remaining production growth in the Middle East is comprised of production increases in Bahrain (2.3 Bcm), Qatar (2 Bcm), and Kuwait (1.8 Bcm) in 2019. Increased demand for natural gas, along with the development of new fields and commissioning of projects such as new phases of the South Pars gas field in Iran, are among the main factors contributing to the production increase in the Middle East.

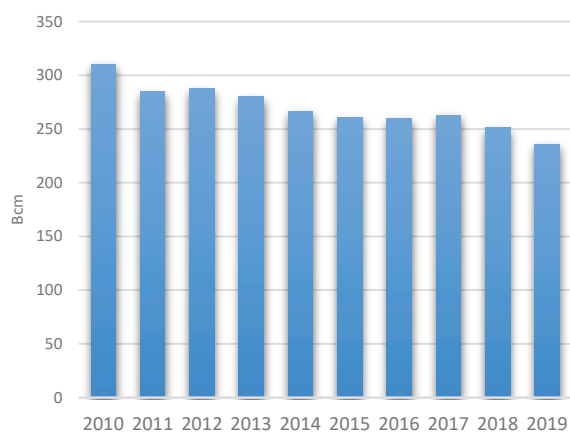
**Figure 36: Share of regions in global natural gas production**



Source: GECF Secretariat based on data from Cedigaz

In Africa, natural gas production rose by 1.2% y-o-y to reach 246 Bcm in 2019, representing a 6% share of global gas production. The increase was driven mainly by Egypt due to higher production from the Zohr field, which offset the production decline from legacy fields. In addition, production from Nigeria, slightly increased (0.5 Bcm) to support strong export and domestic demand.

**Figure 37: Natural gas production trend in Europe**

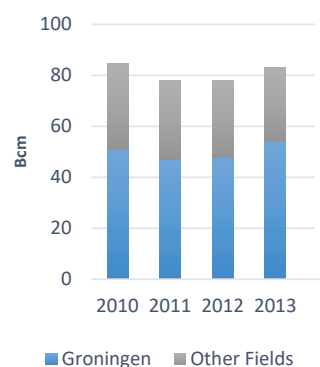


Source: GECF Secretariat based on data from BP Statistical Review 2020

## EUROPE

As indicated in Figure 37, domestic production in Europe fell by 15 Bcm to stand at 236 Bcm in 2019. The production decrease is mainly in the Netherlands due to the implementation of a production cap on Groningen field production. The most notable recent development in Europe was the decision by the Dutch government to impose a production cap on the Groningen field, motivated by recurrent earthquakes in the region, and ultimately to close the field by 2022. The production cap was lowered gradually from 42.5 Bcm in 2014 to 11.8 Bcm in October 2019.

**Figure 38: Natural gas production trend in the Netherlands**



Source: GECF Secretariat based on data from Refinitiv

## ASIA PACIFIC

Natural gas production increased in the Asia Pacific region by 5.6% (y-o-y) to reach 647 Bcm in 2019. Production growth was mostly driven by an increase in output in China and Australia. Natural gas production jumped by 9.8% in China to reach 170 Bcm. In Australia, government policies supporting natural gas production have increased the country's output to 148 Bcm in 2019. Given the recent Australian government policy not to impose restrictions on LNG exports, the country will keep its position as one of the main non-GECF suppliers to the global natural gas market.

In China, the government, based on the five-year energy plan, is looking to increase natural gas production from shale plays to 30 Bcm by 2020. However, given the current level of shale gas production in China, which is around 15 Bcm, achieving the above mentioned target by the end of 2020 is not realistic.

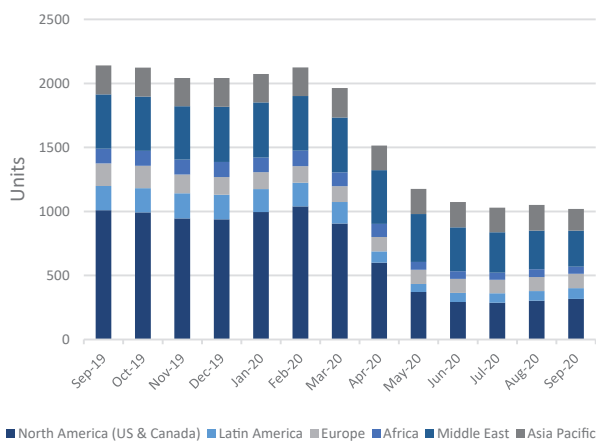
## GLOBAL RIG COUNT

By the end of September 2020, the global rig count decreased by 52% (1,122 units) y-o-y, to 1,019 (Figure 39). The decrease in rig activity took place across all the regions (the U.S., Canada, Latin America, Europe, Africa, the Middle East and Asia Pacific), which dropped by 621, 72, 106, 63, 60, 143 and 57 units to 257, 60, 83, 113, 55, 282, and 169 units, respectively. The North American (the U.S. and Canada) rig count



decreased by 69% (693 units), y-o-y, by the end of September 2020 to stand at 317 units, representing 31% of the global rig count. Meanwhile, the international rig count (excluding North America) decreased by 429 units to 702 units by the end of September 2020 compared to September 2019.

**Figure 39: Trend in Global Rig Count since September 2019**



Source: GECF based on data from Baker Hughes

### 7.1.2 SHORT TERM PERSPECTIVES

To reach ambitious production targets, natural gas producing countries are incentivizing domestic production through reforms to their upstream fiscal regimes, such as royalty tax rebates, in order to reduce the investment risk to foster domestic production of natural gas. However, the complexity of shale gas formations in China, the financial crisis in Argentina, for instance, and the environmental concerns of fracking activities make it difficult for some producers to realize their production targets. The U.S. and Australia were the main sources of natural gas production growth in non-GECF countries in 2019. The increase in natural gas production in Australia is due to growth in Coal Bed Methane (CBM) production, which supports the country's liquefaction plants.

Based on pre-COVID-19 estimates, global natural gas supply was forecast to grow by 2-2.5% in 2020. However, due to the pandemic, and lower demand and low prices of natural gas,

the estimate has now been revised down. In order to estimate natural gas supply in 2020 and 2021, in addition to the resurgence of COVID-19 in major producing and consuming countries such as the U.S., the estimates are based on prolonged weak demand due to COVID-19 lockdown measures. Based on the post-COVID scenario, it is assumed that the pandemic will have a negative impact on upstream activities with global gas production set to decline in 2020 compared to 2019. This is due to lower prices of natural gas and also the negative impacts of COVID-19 on global demand for natural gas. In the case of a prolonged COVID-19 pandemic or resurgence of the pandemic, the negative effect of COVID-19 is expected to be more severe on upstream activities. Accordingly, in the post-COVID scenario, it is estimated that global natural gas production will contract by 2-4% in 2020. Because demand is also a constraint for natural gas production, a more marked decline in natural gas demand will result in a more severe drop in natural gas production in 2020 as a result of the COVID-19 pandemic.

For 2021, it is forecast that global production will recover based on two different scenarios. In the optimistic scenario, if the restrictions are relaxed and prices rebound in the first half of 2021, production will recover to the 2019 level. However, in the pessimistic scenario, if restrictions are extended through the first half of 2021, production will stagnate in the first half, and growth will resume in the second half of 2021. Therefore, production will recover to the 2019 level only in 2022. With a post-COVID gradual lifting of restrictions, global natural gas production is expected to grow, driven by North America (U.S.), Middle East, CIS (Russia) and Africa. Regarding non-GECF countries' natural gas production, it is expected that the U.S. will take the lead in deploying its natural gas resources, given the abundance of shale gas reserves, effective energy policy mechanisms, and fiscal policies.

Meanwhile, with a high percentage of natural gas production and incremental volumes, the

GECF Member Countries continue to be a very important source of natural gas supply that is required to not only satisfy their contractual obligations, but also to meet their domestic gas requirements, to provide the world with a clean and environmentally friendly energy source.

## 7.2 UNDERGROUND GAS STORAGE

### 7.2.1 RECENT TRENDS

Natural gas storage has become a crucial element of the global natural gas supply chain, playing a key role in balancing gas markets, while smoothing out annual and seasonal fluctuations in gas demand and supply.

Ensuring security of gas supply is a key rationale for gas storage development, with market operators striving to hedge against the risks of gas supply disruptions and fluctuations of gas demand. The seasonal factor dominates in the E.U. and U.S., which are known for notable winter and summer seasons. Gas demand from residential and commercial sectors rises for heating purposes in winter and falls in summer. In the E.U., geopolitical factors also play an important role due to the growing import dependency of the region.

Exploiting the winter-summer gas price spread is the other crucial rationale for gas storage development. Gas storage enables the efficiency of commercial cycles in the gas industry to be ensured as it gives market players the opportunity to purchase cheaper gas at off-peak periods and sell it later during peak shaving periods.

Global gas storage capacity amounts to 421 Bcm, with the U.S. and E.U. capacity at 137 Bcm and 103 Bcm, respectively. There are 662 underground storage facilities in operation in the world, with the U.S. and E.U. accounting for 58% and 21% of them.

The most critical indicator in gas storage is the storage-to-consumption ratio, representing the correlation between effective working gas storage capacity and gas consumption.

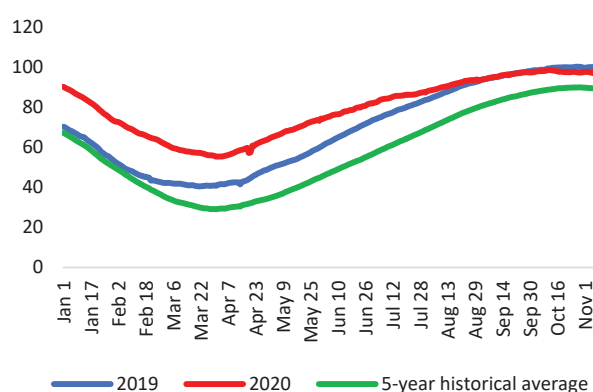
<sup>8</sup>GECF Secretariat (2020). The role of gas storage in balancing gas markets in the E.U. and U.S.

Currently, the ratio is at 22% in the E.U. and at 16% in the U.S., while the global ratio is 11%.

Gas storage developments have a major influence on the global gas market. Depending on market conditions, E.U. and U.S. gas demand may increase driven by the need to replenish gas storage, or it may drop because of the high volume of gas in storage. As such, a high level of gas in storage may lead to a decline in regional and global gas prices, while low level of storage may support prices.<sup>8</sup>

2019 witnessed growing gas storage capacity utilization in the E.U., with gas demand lagging behind gas supply, driven by an increase in LNG imports. January 2020 started with an abnormally high level of gas in storage. In the first half of 2020, the situation was exacerbated by declining gas demand due to the mild winter and the COVID-19 outbreak. As a result, the E.U. entered the injection season in April 2020 with the highest ever level of gas in storage. Throughout the first 10 months of 2020, the high level of gas in storage put significant downward pressure on gas prices. As of November 1, 2020, the volume of gas in storage in the E.U. reached 98 Bcm, or 95% of UGS capacity, which compares to the five-year historical average of 90 Bcm (Figure 40).

**Figure 40: Gas in Storage in the E.U. (Bcm)**



Source: GECF Secretariat based on data from AGSI+

The withdrawal season, which usually lasts from November to March, will reduce the volume of gas in storage, which will ease the downward pressure on gas prices.

08

**TRADE**



## 8 TRADE

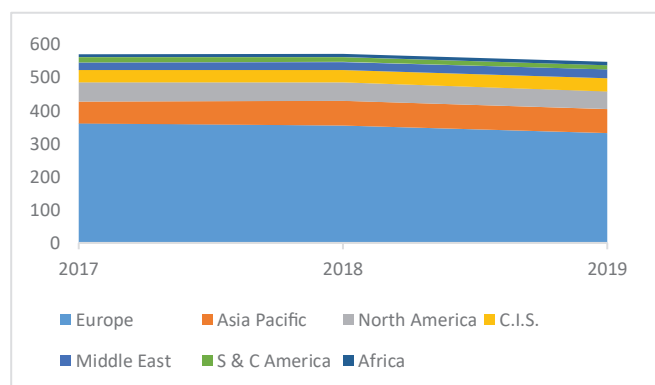
### 8.1 GLOBAL PIPELINE GAS TRADE

#### 8.1.1 RECENT TRENDS

In 2019, global pipeline gas trade, based on the net flows approach, declined by 4.3% to 546 Bcm. The net flows approach enables us to avoid double counting of some pipeline gas flows, including re-exports of pipeline gas and exports of regasified LNG in Europe. Based on a gross flows approach, global pipeline gas trade reached 825 Bcm.

In terms of net pipeline gas imports, Europe was the leader with 61% of the market, while Asia Pacific and North America represented 13% and 10% of the market, respectively (Figure 41).

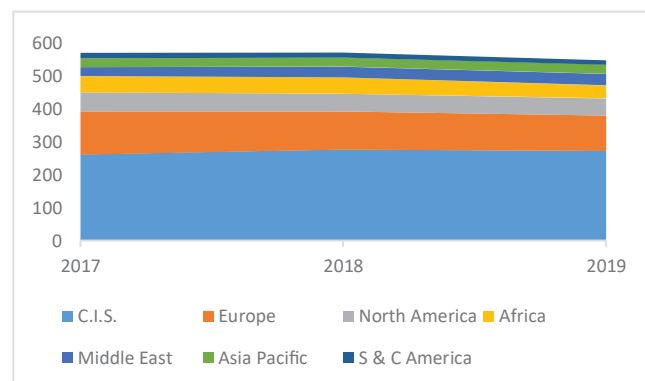
**Figure 41: Net Pipeline Gas Imports by Region (Bcm)**



Source: GECF Secretariat based on data from Cedigaz

In terms of net pipeline gas exports, C.I.S. dominated with 50% of the market, while Europe and North America represented 20% and 10% of the market, respectively (Figure 42).

**Figure 42: Net Pipeline Gas Exports by Region (Bcm)**

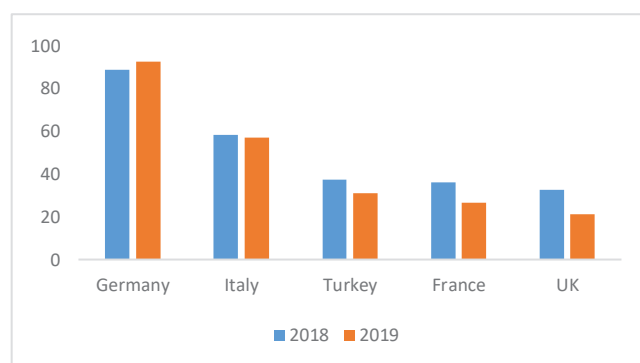


Source: GECF Secretariat based on data from Cedigaz

## EUROPE

In 2019, regional net pipeline gas imports fell by 6% to 332 Bcm, which was mainly driven by much higher LNG imports. Germany, Italy, Turkey, France and UK were the largest import markets, accounting for 69% of regional net pipeline gas imports (Figure 43).

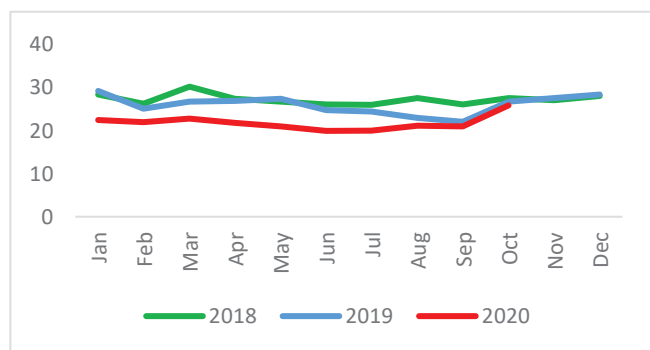
**Figure 43: European Net Pipeline Gas Imports by Importing Country (Bcm)**



Source: GECF Secretariat based on data from Cedigaz

Against the backdrop of the COVID-19 pandemic, extra-E.U. pipeline gas imports fell in the first 10 months of 2020 by 16% y-o-y to 216 Bcm, with GECF Member Countries accounting for 100% of supply (Figure 44). All suppliers, including Russia, Norway, Algeria and Libya, reduced pipeline gas exports to the E.U.. However, a recovery is expected with the coming winter season and the incremental supplies from new gas pipelines coming from the GECF, as explained in the following subsection related to the short-term perspectives.

**Figure 44: Extra-E.U. pipeline gas imports (Bcm)**



Source: GECF Secretariat based on data from McKinsey Energy Insights

## NORTH AMERICA

In 2019, regional net pipeline gas imports fell by 5% to 53 Bcm. It was the first year that the U.S. became a net exporter of pipeline gas, with its exports and imports at 80 Bcm and 76 Bcm, respectively. The surge in U.S. exports was driven by increased supply both to Mexico (53 Bcm) and Canada (27 Bcm), while U.S. imports from Canada decreased by 4 Bcm to 76 Bcm.

## ASIA PACIFIC

In 2019, regional net pipeline gas imports dropped by 3% to 73 Bcm. China's imports stagnated at 50 Bcm, with a slowdown in the government's coal-to-gas switching policy. Supply to China from Myanmar and Kazakhstan grew to 4.7 Bcm and 7.1 Bcm, respectively, while supply from Turkmenistan and Uzbekistan fell to 33.1 Bcm and 5.1 Bcm, respectively. In December 2019, China started imports from Russia through the Power of Siberia pipeline, with supply reaching 0.3 Bcm in 2019.

## LATIN AMERICA

In 2019, regional pipeline gas trade dropped by 19% to 13.3 Bcm. Bolivia remained a leader exporting 12.6 Bcm, with 6.6 Bcm going to Brazil and 6.0 Bcm destined for Argentina. Argentina exported 0.6 Bcm to Chile and 0.1 Bcm to Uruguay.

In the first half of 2020, regional trade increased by 3% y-o-y to reach 6.5 Bcm. Bolivia exported 5.4 Bcm, with 2.9 Bcm going to Brazil and 2.5 Bcm destined for Argentina. In the meantime, Argentina exported 1.1 Bcm to Chile and Uruguay.

### 8.1.2 SHORT TERM PERSPECTIVES

In the short term, the commissioning of new gas pipelines in Europe, China and Mexico might become drivers of global pipeline gas trade growth. New export projects come mainly from GECF Member Countries, with 140 Bcm/y of new export gas pipeline capacity to be commissioned in 2019-2021. Russia commissioned the Power of Siberia (38 Bcm/y) in December 2019 and TurkStream (31.5 Bcm/y) in January 2020, while Nord Stream 2 (55 Bcm/y) is likely to be completed in 2021. Azerbaijan's Southern Gas Corridor represents 16 Bcm of new capacity, with TAP, the final phase of the project, to come online by the end of 2020.

In the short term, pipeline gas imports in Europe will largely depend on the pace of the recovery of gas demand after lockdown measures related to the COVID-19 pandemic are lifted in the region. Weather conditions in the winter season and the growing competition from LNG supply will be other crucial factors, which will have impact on pipeline gas supply. In any case, the contractual obligations of European importers under take-or-pay clauses will help pipeline gas supply to retain its dominant position.<sup>9</sup>

In Asia, China will remain a key driver of regional pipeline gas trade. Russia's Power of Siberia pipeline, whose design capacity represents 13% of China's gas consumption, became the third major gas pipeline into China, in addition to the pipelines from Myanmar and from Central Asia, delivering gas from Turkmenistan, Uzbekistan and Kazakhstan. In 2020, China is expected to import up to 5 Bcm from Russia.

<sup>9</sup>GECF Secretariat. (2020). Expert Commentary - Growing Competition between Pipeline Gas and LNG Supplies in the European Union amid the Covid-19 Outbreak.



The Middle East may increase intra-regional pipeline gas trade, driven by East Mediterranean production.

Latin American pipeline gas trade, whose dynamics depend largely on regional LNG imports, is likely to stagnate. Argentina can reduce its gas import dependency by increasing domestic shale gas production, however, Brazil may increase gas imports.

## 8.2 LNG TRADE

### 8.2.1 GLOBAL LNG TRADE

#### GLOBAL LNG TRADE IN 2019

In 2019, LNG trade has continued to grow strongly driven by the significant increase in European LNG demand. Total LNG trade reached 354.6 Mt in 2019, representing almost 11.7% growth as compared with 2018. Mild weather, higher stock levels and ramp-up of nuclear power generation in the first half of the year 2019 reflected in lower than expected LNG demand growth in Asia. Considerable LNG demand growth in China during January to September 2019 offset by decline in LNG imports into Japan, South Korea and Taiwan. LNG demand in Asia grew by 2.8% reaching to 246.7 Mt in 2019. Weak LNG demand growth in Asia pushed excess LNG supply toward European market during 2019. Therefore, competitive LNG prices at the major liquid hubs in Europe became more attractive in the first nine months of 2019. Considerable growth of European LNG demand resulted in recording 84.9 Mt LNG imports in the year 2019, almost 68% (34.2 Mt) higher than 2018. However, LNG demand in MENA region has declined by 25%, reaching to 7.2 Mt in 2019 almost 2.4 Mt less than a year before. LNG imports to Latin America stood at 14.5 Mt in 2019, about 0.68 Mt less than 2018.

#### ASIA

Total LNG imports into Asia amounted to 246.7 Mt in 2019, representing growth of 2.8% (or 6.8

Mt) in comparison with 2018. Significant LNG demand growth in China, Bangladesh, India, Malaysia, Indonesia, and Pakistan resulted in overall LNG demand growth in the Asia region. However, LNG demand in Japan, South Korea and Taiwan declined in 2019, partly offsetting LNG growth in Asia. Japan's LNG imports in 2019 stood at 77.2 Mt, the lowest level since 2011. The restart of nuclear power generation, mild weather, higher storage levels as well as a slowdown in industrial activity during 2019 resulted in lower LNG demand. China's LNG imports totalled 61.7 Mt in 2019, up by 14.9% (or 8 Mt) compared with 2018. Although in China the pace of LNG demand growth in 2019 was slower than in 2018, the country still contributed 8 Mt to incremental demand in Asia and remains the main driver of LNG demand growth in the region. LNG imports into South Korea in 2019 amounted to 40.6 Mt in 2019, almost 8% less than a year before. A slowdown in overall power demand, higher power generation from nuclear and renewable energy sources, and limited coal-to-gas switching resulted in a 3.5 Mt decline in LNG demand during 2019. Total LNG imports into Taiwan stood at 16.8 Mt in 2019, a 1.7% decline on 2018. Higher nuclear power generation offset by lower coal-fired power generation was reflected in a slight decline in Taiwan's LNG demand in 2019. Total LNG imports into Pakistan totalled 8 Mt, around 13% higher than a year earlier. India imported 23.8 Mt in 2019, almost 5% higher than 2018. Increasing LNG demand in Bangladesh, Indonesia and Malaysia offset by lower imports into Thailand and Singapore resulted in overall LNG import growth in December 2019. To sum up, LNG demand in the rest of Asia rose by 48% in 2019 to 18.6 Mt.

#### EUROPE

European LNG demand continued to grow in 2019, reaching a new record of 84.9 Mt. Europe's LNG imports grew by 68% in 2019, 34.2 Mt higher than in 2018. This was the result of narrowing differentials between LNG prices in Asia and Europe, and higher flows of spot LNG



cargoes towards Europe as a sink market in the first nine months of 2019. LNG imports by most of the countries in the region, including Belgium, France, Greece, the UK, Italy, Netherlands, Poland, Portugal, Spain and Turkey increased sharply in 2019 compared with a year before.

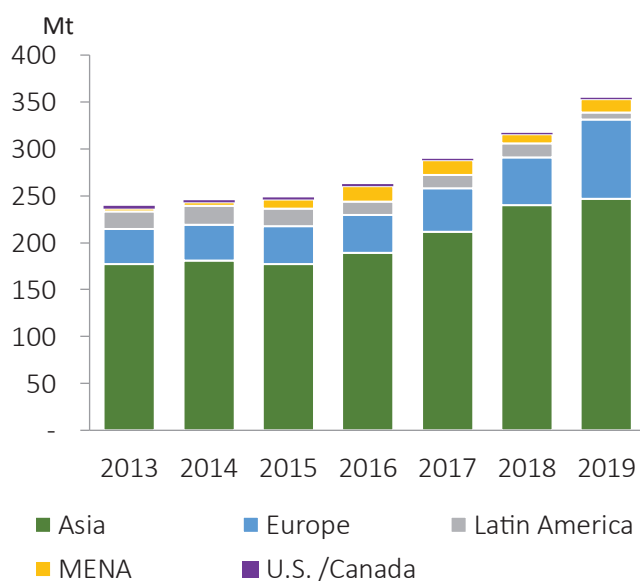
## MENA

Total LNG demand in the MENA region fell to 5.9 Mt in 2019, representing a 38% decline on 2018. LNG demand in most of the countries in the MENA region, including Egypt, Israel, Jordan and Kuwait, fell significantly in 2019. The UAE was the only country in the region where LNG imports rose, from less than 1 Mt in 2018, to around 4 Mt in 2019.

## LATIN AMERICA

Total LNG imports to Latin America amounted to 14.5 Mt in 2019, representing a 4% decline on 2018. The decline in Latin American LNG imports was caused mainly by lower LNG demand in Argentina. Argentina's LNG imports halved in 2019 to 1.2 Mt in 2019, from 2.5 Mt in 2018 due to higher domestic production.

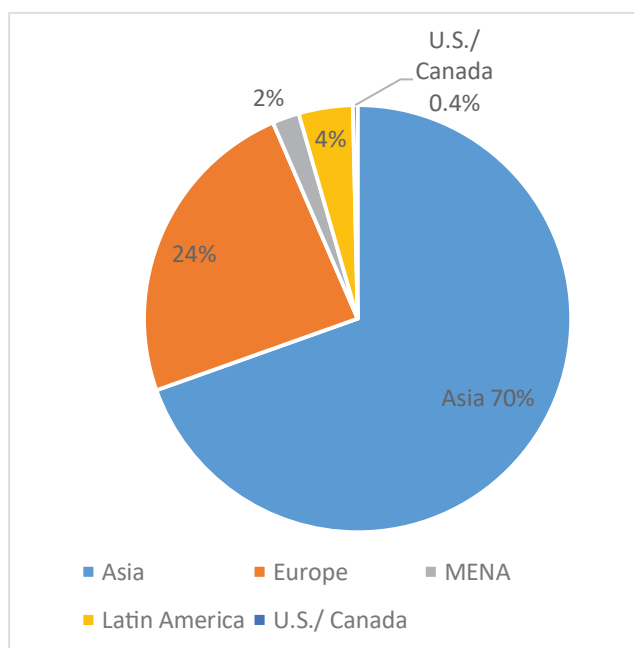
**Figure 45: Trend in Global LNG Trade by Region.**



Source: GECF Secretariat based on data from ICIS LNG Edge

In terms of regional market share, Asia continued to dominate global LNG imports accounting for 70% of the total LNG trade in 2019, followed by Europe with 24%, Latin America (4%), MENA (2%) and North America (0.4%) as shown in Figure 46. In comparison with 2018, Europe gained 8% more market share from other regions. Asia lost 6%, Latin America lost 1% and MENA lost 1% of their market shares compared with the previous year. There was lower LNG demand in the MENA region mainly due to Egypt halting LNG imports in the last quarter of 2018.

**Figure 46: Share of Global LNG Trade by Region in 2019**



Source: GECF Secretariat based on data from ICIS LNG Edge

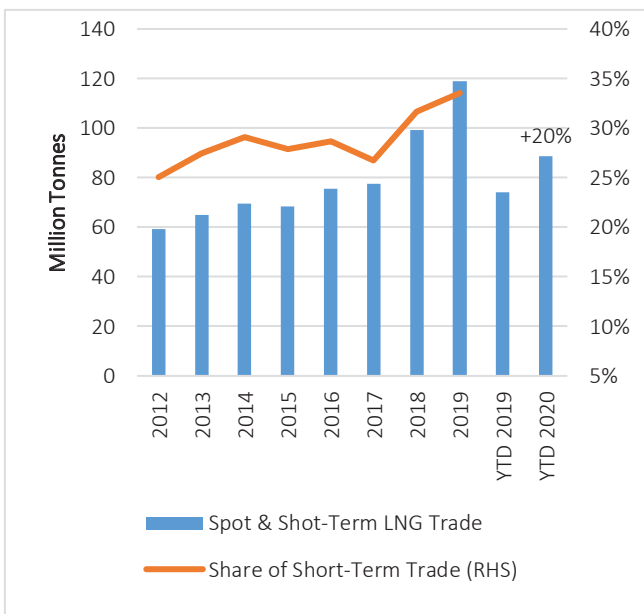
## SPOT & SHORT-TERM LNG TRADE IN 2019

In 2019, the share of spot and short-term (less than 4 years) trade averaged 34% in 2019, up from 31% in 2018, as shown in Figure 47. In terms of the volumes of LNG traded on a spot and short-term basis, it increased by 20.2% y-o-y to 120 Mt in 2019. The jump in short-term trade was driven by the increase in flexible LNG volumes from the U.S., as projects were commissioned and continued to ramp up, and

higher volumes traded by traders and portfolio players.

For the period January-October 2020, spot and short-term (less than 2 years) trade jumped by 20% y-o-y to 88.6 Mt. The higher flexible LNG volumes from the U.S. drove the growth in the short-term LNG trade. In addition, the impact on global LNG demand of COVID-19 resulted in some LNG buyers cancelling or postponing LNG deliveries to the second half of the year. These cargoes were added to the global spot supply pool, which pushed spot prices even lower. However, the multi-year low spot prices generated opportunistic purchases of spot LNG and in turn drove the short-term trade higher.

**Figure 47: Trend in Spot & Short-Term LNG Trade**



Source: GECF Secretariat based on data from GIIGNL LNG Report 2020 and ICIS LNG Edge YTD: January – October Note:

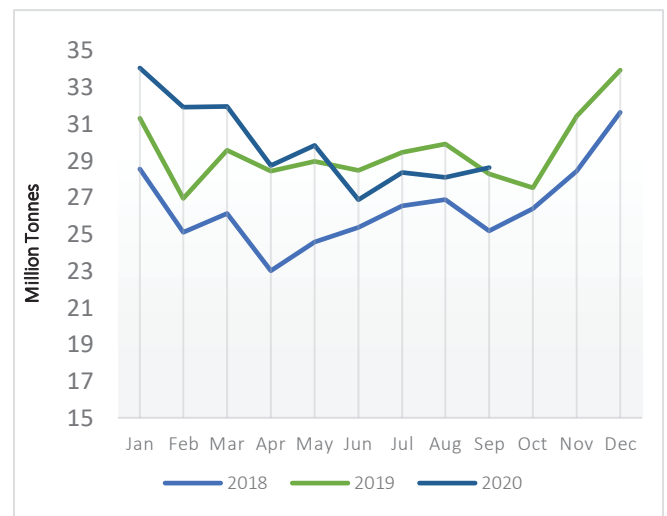
The annual spot and short-term trade refers to cargoes delivered under contracts of 4 years or less. Meanwhile, for YTD 2019 and 2020, spot and short-term trade refers to cargoes delivered under contracts of 2 years or less.

## GLOBAL LNG TRADE IN 2020

In 2020, the outbreak of COVID-19 affected the pace of global LNG trade growth. During the 1st quarter of 2020, global LNG imports grew by more than 11% y-o-y compared with the same period of 2019, but global LNG trade remained flat in the 2nd quarter and fell slightly in the 3rd quarter. During the 1st quarter of 2020, global

LNG trade reached 97.9 Mt, almost 11.1 Mt higher than in the same period of 2019. However, the sharp contraction of economic activity during the second quarter due to strict lockdowns, declining gas demand and the cancellation of LNG cargoes resulted in a slowdown of LNG trade in the 2nd quarter. LNG trade stood at 85.6 Mt in the 2nd quarter, slightly lower than the 85.9 Mt registered in the 2nd quarter of 2019. LNG demand continued to fall in the 3rd quarter though it began to rebound in September. During the period July to September 2020, global LNG trade stood at 85.1 Mt, representing an almost 3% (or 2.5 Mt) decline when compared with the same period of 2019 (Figure 48).

**Figure 48: Monthly LNG trade**



Source: GECF Secretariat based on data from ICIS LNG Edge

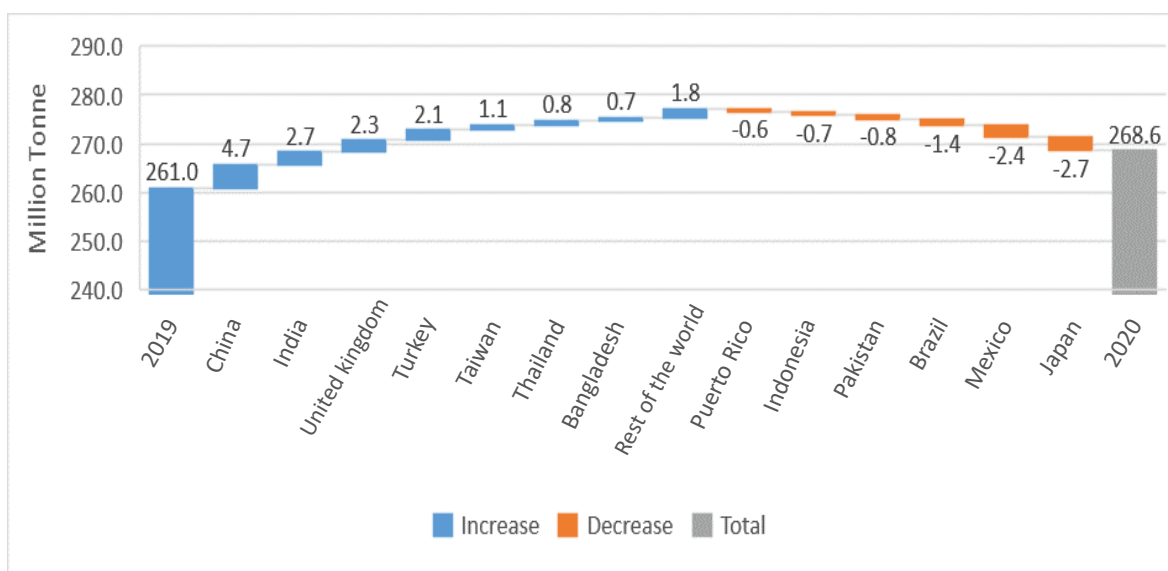
In the first 9 months of 2020, global LNG demand was resilient despite the sharp contraction of economic activity during the period. However, the pace of LNG trade growth lost momentum compared with previous years. During the first 9 months of 2020, global LNG trade amounted to 268.5 Mt, representing growth of 3% (or 8.4 Mt) compared with the same period last year. During this period, Asia imported 186.9 Mt, showing 3.2% y-o-y growth. Asia contributed 5.8 Mt to incremental demand thanks to growing LNG imports into China, India, Taiwan, and Thailand,

while LNG has declined in Japan and South Korea in the period January-September 2020. LNG imports into Europe also increased by 8.4% y-o-y (or 5.1 Mt) reaching 65.8 by the end of September 2020. However, LNG demand in Latin America declined significantly during the first 9 months of the year, falling to 8.4 Mt from 12.1 MT compared with the same period last year. LNG imports into the MENA region stood at 6 Mt in the first three quarters of the year, slightly below the 6.2 Mt imported during the same period last year.

In terms of the main changes in LNG imports, China, India, the UK, Turkey, Taiwan and Thailand were the main contributors to incremental LNG imports in 2020, while LNG imports into Japan, Mexico and Brazil declined compared with the same period last year (Figure 49).

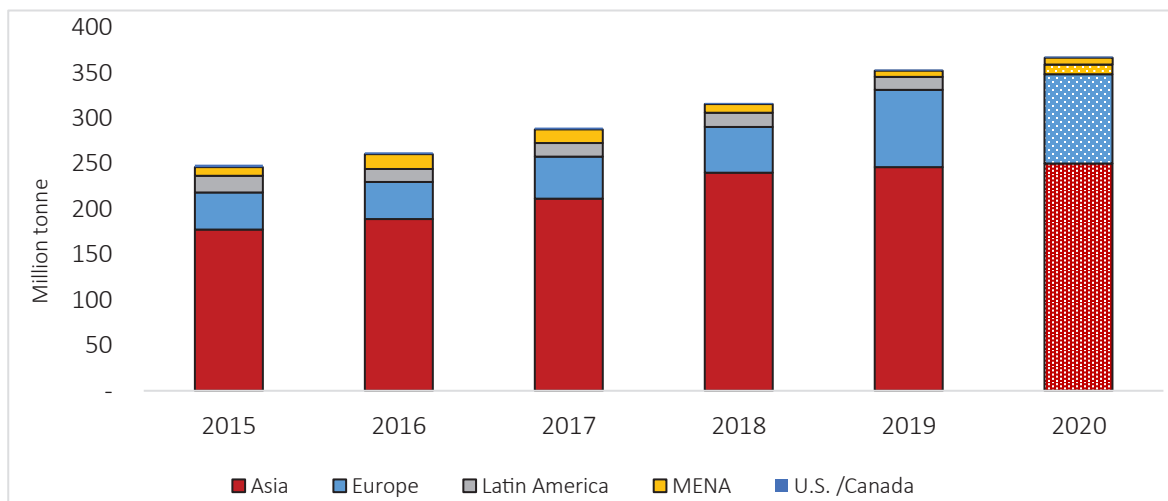
LNG trade is expected to rebound in the 4th quarter of 2020, with global LNG trade projected to grow by 3-3.5% in 2020 to reach 364-366 Mt, almost 10-12 Mt higher than a year before (Figure 50).

**Figure 49: LNG import variations (January-September 2020)**



Source: GECF Secretariat based on data from ICIS LNG Edge

**Figure 50: Trend in Global LNG trade**



Source: GECF Secretariat based on data from ICIS LNG Edge

## 8.3 GLOBAL LNG SUPPLY

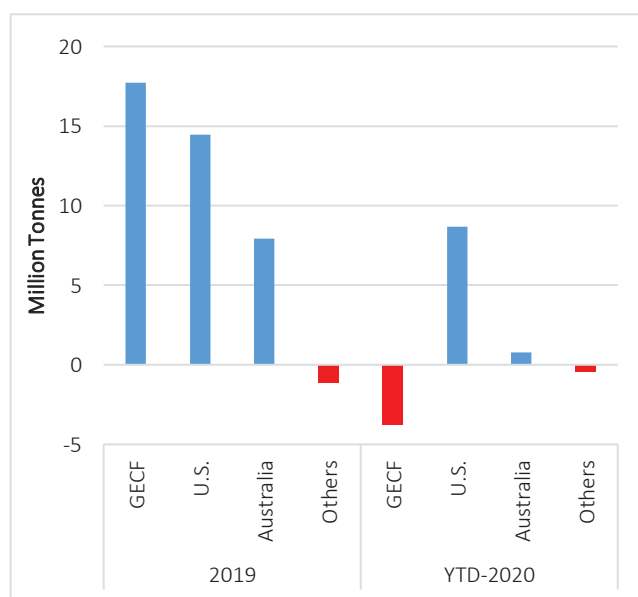
### GLOBAL LNG SUPPLY IN 2019 & 2020

In this report, LNG exports are LNG volumes delivered to importing countries, not LNG volumes loaded by exporting countries. Global LNG exports in 2019 rose by 12.4% y-o-y to 354 Mt, which is the second highest annual growth rate after 2010. The increase in exports was driven by higher LNG production from both GECF and non-GECF countries (see Figure 51). GECF's LNG exports increased by 9.1% (18 Mt) y-o-y to 212 Mt, while non-GECF exports rose by 17.5% (21 Mt) y-o-y to 142 Mt. In 2019, GECF's share of global LNG exports averaged 60%, down slightly from around 61% in 2018.

At the country level, the U.S., Russia and Australia accounted for the bulk of incremental LNG supply in 2019. The start-up of LNG projects in the U.S. and the ramp-up of LNG production in the U.S., Russia and Australia supported the higher output. In addition, higher LNG production in GECF Member Countries, Egypt, Algeria and Malaysia, also contributed significantly to the higher supply, which offset a fall in production in Indonesia.

During the first ten months of 2020, global LNG exports (excluding reloads) grew by 1.8% (5 Mt) y-o-y to 295 Mt. As shown in Figure 51, non-GECF countries drove the growth in LNG exports, increasing by 7.8% y-o-y, offsetting a small decline in GECF's LNG exports (-2.2%). The U.S. drove the increase in global LNG exports during this period, recording growth of 31.9% (9 Mt) y-o-y. GECF LNG supplies dropped by less than 4 MT in 2020 so far, without reducing the dominance of the GECF on LNG market supply.

**Figure 51: Incremental LNG Supply by Supplier in 2019 & YTD 2020**



Source: GECF Secretariat based on data from ICIS LNG Edge  
YTD 2020: January – October

#### 8.3.1 SHORT-TERM PERSPECTIVES FOR LNG SUPPLY

As shown in Figure 52, global LNG export growth is forecast to slow in the short term, compared to the last three years. Before the COVID-19 pandemic, GECF forecasted an increase of 6.5% (23 Mt) y-o-y in incremental LNG exports in 2020, mainly driven by the U.S. However, the forecast LNG supply growth has since been revised downwards. The current LNG oversupply, which has been exacerbated by COVID-19, has driven global spot gas and LNG prices to all-time lows. This resulted in U.S. spot LNG becoming uneconomical for delivery to Europe, which usually acts as a sink market in periods of LNG oversupply. As such, around 170-180 LNG cargoes from the U.S. for loading between May and September 2020 were cancelled due to the negative price spreads between the European and Henry Hub futures prices for delivery during this period<sup>10</sup>.

Given the low spot price environment, we expect a loss in LNG supply of between 12 and 15 Mt in 2020, mainly from the U.S. This could see global LNG exports, excluding reloads, grow by 2-2.5%

<sup>10</sup>GECF Secretariat (2020). The Impact of COVID-19 on U.S. Gas Demand and LNG Exports



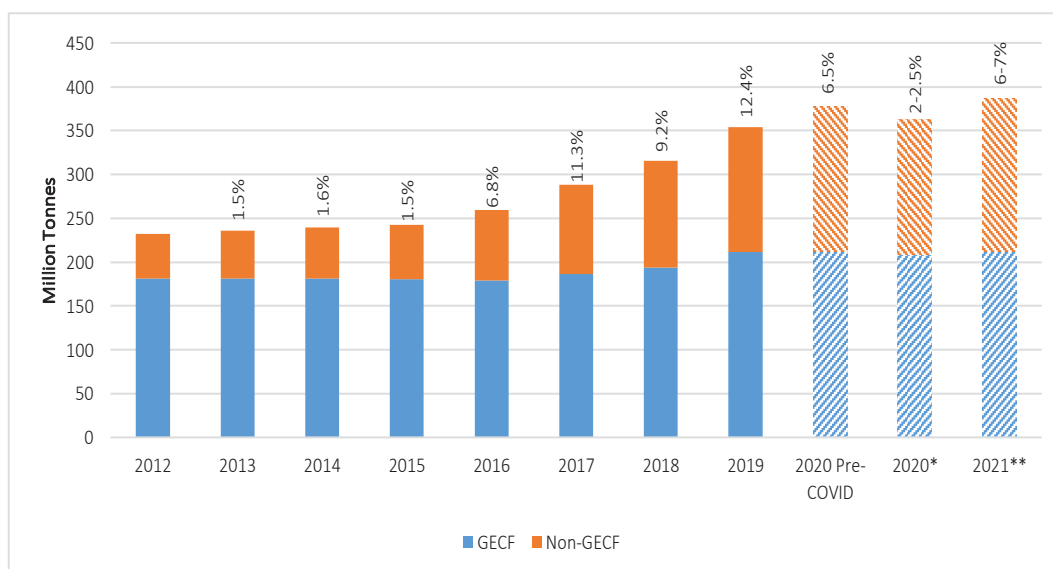
in 2020 (see Figure 52). However, considering the increase in reload activity from Europe to Asia in 2020, global LNG supply (including reloads) is forecast to increase by 2.5-3% this year.

For 2021, if global gas and LNG demand returns to pre-COVID levels and there are no U.S. LNG shut-ins, global LNG exports could grow by 6-7%. This is based on the assumption that the LNG volumes lost in 2020 come to market next year. However, this forecast has been revised down from our previous forecast of 7-7.5% mainly due to maintenance activity planned at

several LNG facilities globally in 2021, particularly the Gorgon LNG facility in Australia and the Hammerfest LNG facility in Norway which have both been impacted by technical issues. In addition, the cancellation of the Tango FLNG charter in Argentina and feedgas issues in some countries have also been factored in.

In the short term, non-GECF countries, particularly the U.S., are expected to drive the increase in global LNG exports. Although the higher LNG exports from non-GECF countries could affect GECF's LNG market share, GECF will still be the dominant LNG supplier globally.

**Figure 52 : Trend in Global LNG Exports by Supplier**



Source: GECF Secretariat based on data from ICIS LNG Edge and Project Updates

(\*): GECF's estimate based on a loss of 12-15 Mt of global LNG exports in 2020 from the pre-COVID forecast

(\*\*): GECF's forecast based on no U.S. LNG shut-in in 2021 and the lost LNG supply from 2020 comes to the market in 2021.

This forecast also considers maintenance activity in several LNG facilities.

## 8.4 GLOBAL LNG SUPPLY BY MARKET DESTINATION

In terms of LNG exports by market destination, GECF's LNG exports are more diversified compared to those of non-GECF suppliers (see Figure 53). Out of a total 212 Mt of global LNG imported from GECF Member Countries last year, 60% was shipped to the Asian markets, followed by 34% to Europe, 3% to Latin America, 3% to MENA and less than 1% landed in the U.S.

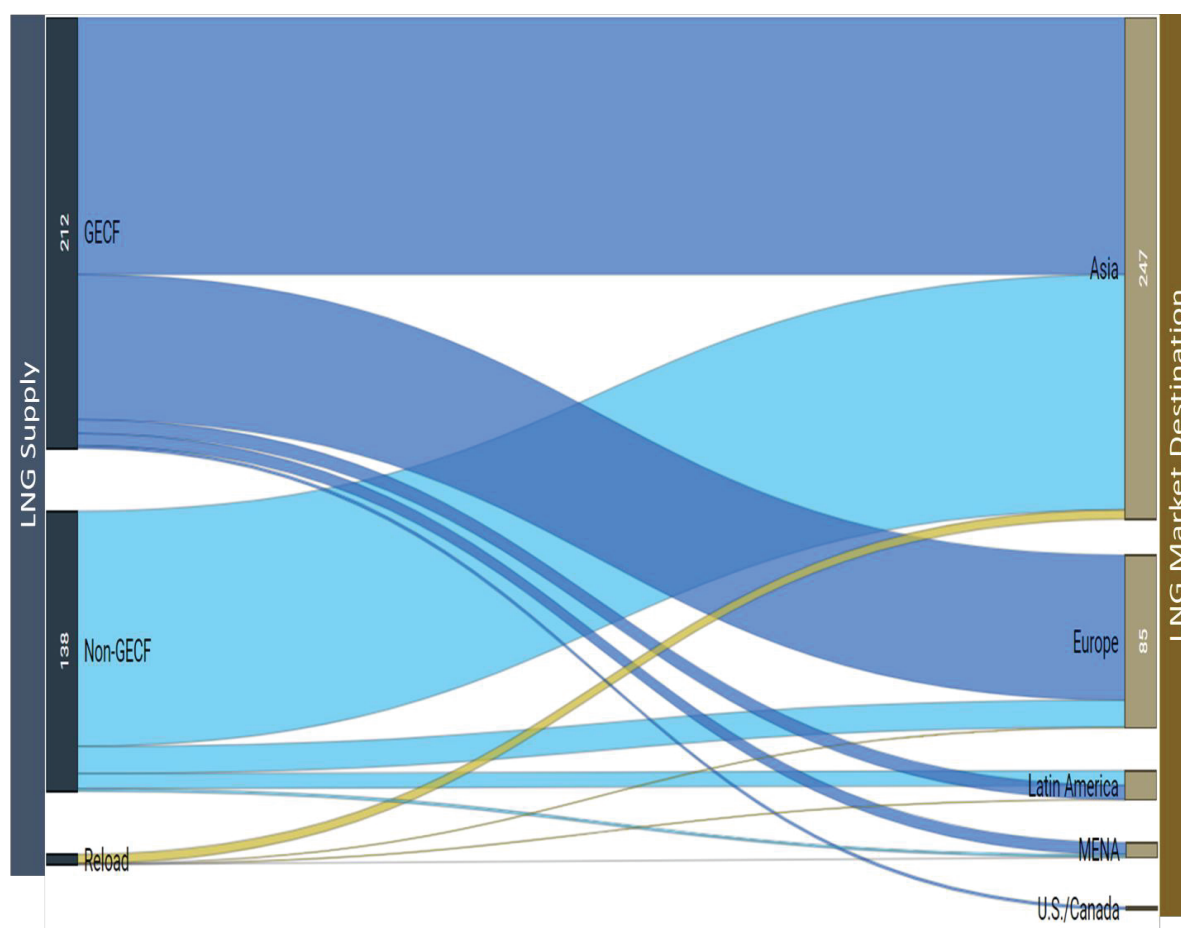
& Canada. In contrast, around 84% of non-GECF LNG exports landed in Asia, followed by 10% in Europe, 5% in Latin America and 1% in the MENA region.

From January-October 2020, 171 Mt of LNG was imported globally from GECF Member Countries, with 61% destined for Asia, 32% to

Europe, 3% each to Latin America and the MENA region and 1% to the U.S./Canada (see Figure 54). Meanwhile, Asia absorbed 83% of non-GECF LNG exports during the same period 2020 followed by Europe (12%), Latin America (4%) and MENA (1%).

The small shift in the share of non-GECF LNG exports from Asia and Latin America to Europe during the first ten months of 2020 was mainly due to higher U.S. LNG exports to Europe. The historic low spot gas and LNG prices in the global market, and the absence of arbitrage opportunity between the Atlantic and Pacific basins between Q1 and Q2 2020, supported the influx of U.S. LNG into Europe.

**Figure 53: GECF & Non-GECF LNG Flows by Market Destination in 2019**



Source: GECF Secretariat based on data from ICIS LNG Edge

**Figure 54: GECF & Non-GECF LNG Flows by Market Destination between Jan and Oct 2020**



Source: GECF Secretariat based on data from ICIS LNG Edge

## 8.5 NEW LNG EXPORTING CAPACITY

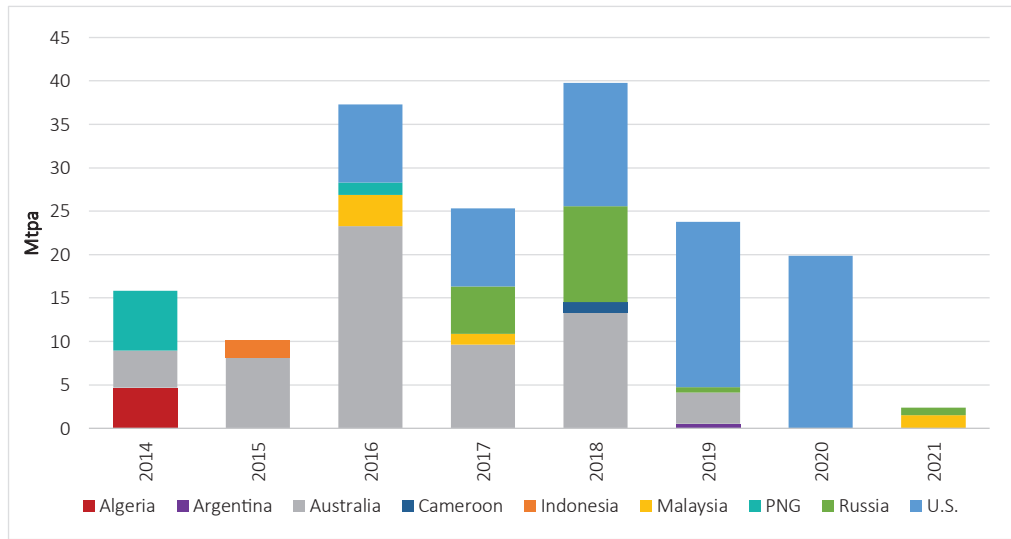
Global LNG installed capacity increased by 5.8% in 2019 with 24 Mtpa of additional capacity (see Figure 55) to reach 444 Mtpa, down from the 40 Mtpa that came online in 2018. In 2019, the U.S. commenced exports from Corpus Christi LNG Train 2, Cameron LNG Train 1, Freeport LNG Trains 1 and 2 and Elba Island LNG Trains 1-3, adding 19.5 Mtpa. Australia commissioned the long-awaited Prelude FLNG facility with a capacity of 3.6 Mtpa while Russia, a GECF Member Country, commissioned the Vysotsk LNG facility with a capacity of 0.7 Mtpa.

In 2020, a further 20 Mtpa of new LNG capacity began operations for export to the global market, all from the U.S. The projects include Cameron LNG Trains 2 and 3, Freeport LNG Train 3, Elba Island LNG Trains 4-10 and Corpus Christi Train 3.

Further ahead in 2021, two LNG projects, Yamal LNG Train 4 in Russia and the PFLNG Dua in Malaysia with a combined capacity of 2.4 Mtpa, are forecast to commence operations.



**Figure 55: New LNG Exporting Capacity between 2014 and 2021**

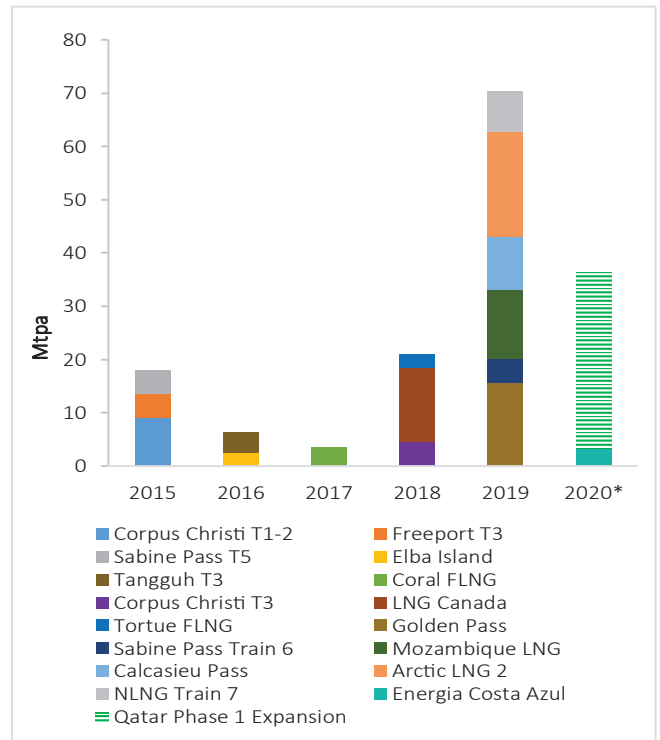


Source: GECF Secretariat based on data from ICIS LNG Edge and Project Updates

In terms of the development of new LNG capacity, 2019 saw the highest combined LNG capacity to take FID in a single year, which surpassed the previous record of 45 Mtpa in 2005. Six LNG projects took FID last year including Golden Pass (15.6 Mtpa), Sabine Pass Train 6 (4.5 Mtpa) and Calcasieu Pass (10.8 Mtpa) in the U.S., Mozambique LNG (12.88 Mtpa), Russia’s Arctic LNG-2 (19.8 Mtpa) and Nigeria LNG Train 7 (7.6 Mtpa), with a total capacity of around 71 Mtpa (see Figure 56). Almost 40% of the LNG capacity that took FID last year came from GECF Member Countries, Russia and Nigeria. It is also worth mentioning that the Arctic LNG-2 project in Russia is the single largest LNG project to ever take FID.

The 90 Mtpa of LNG capacity sanctioned in 2018 and 2019 represents around 25% of global LNG trade in 2019, with the additional volumes expected to come to market between 2022 and 2028.

**Figure 56: FIDs on New LNG Projects**



Source: GECF Secretariat based on data from Project Updates  
 (\*): Includes LNG projects from countries, which are targeting FID in 2020



As shown in Figure 56, only one LNG project, Energia Costa Azul (3.5 Mtpa) in Mexico, has reached FID in 2020 thus far. However, Phase 1 of Qatar's LNG expansion, with a capacity of 33 Mtpa, could reach a positive FID before the end of 2020. It should be noted that around 140 Mtpa of LNG capacity, which was targeting FID this year, has already been delayed to 2021 or beyond, due to the low price environment and the COVID-19 outbreak. Around 51% of the delayed FIDs on LNG projects were in the U.S., followed by Russia (14%), and Mozambique (11%). The remaining 24% were from Australia, Canada, Papua New Guinea and Senegal/Mauritania.

## 8.6 GLOBAL LNG SUPPLY/DEMAND BALANCE

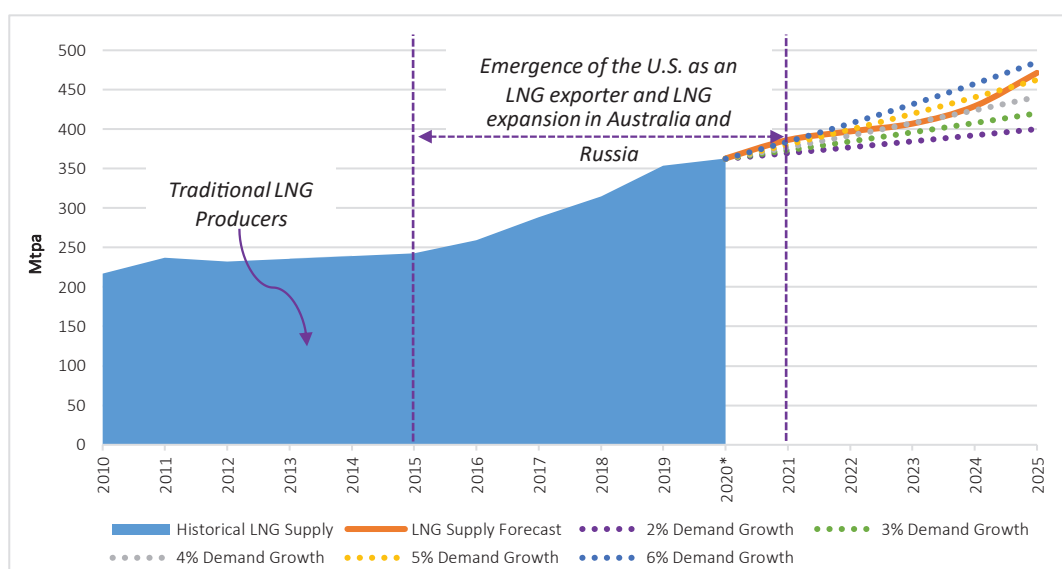
For the LNG supply forecast, we factored in the LNG supply responses by existing LNG facilities in 2020 and 2021 due to the low spot prices, as well as maintenance activities in 2021, after which we assumed a steady LNG production at 2022 level from existing facilities. For the incremental supply between 2020 and 2025, this includes new LNG supply from LNG facilities ramping-up, under construction and those that have taken FID until the middle of November 2020. This has also been adjusted for LNG supply responses to low prices in 2020 and 2021. An LNG capacity

utilization rate of 95% was used for modelling the short to medium-term LNG supply.

In terms of the global LNG supply/demand balance, as shown in Figure 57, the global LNG market is well supplied in the short term as LNG supply grows faster than LNG demand. Incremental LNG supply in 2019 recorded the largest ever increase, surpassing the previous record in 2010 and was supported by the ramp-up and start-up of new LNG projects in Australia, Russia and the U.S. However, the pace of growth in global LNG supply in 2020 and 2021 is forecast to be lower than the last three years, driven by less LNG capacity being commissioned. Assuming an annual growth of around 4% in global LNG demand in the medium- to long-term, we forecast a tightening of the global LNG market from around 2022/2023 driven by an expected slowdown in LNG supply, while global LNG demand continues to increase. This is expected to support a recovery in spot gas and LNG prices globally.

Post-2024, if global LNG demand expands at the same pace or faster than LNG supply, this could contribute to higher spot prices. In contrast, if global LNG demand does not expand sufficiently to absorb the forecast growth in LNG supply, the market could face another period of oversupply.

**Figure 57: Global LNG Supply/Demand Balance Outlook**



Source: GECF Secretariat based on data from Cedigaz, ICIS LNG Edge and Project Updates  
 (\*): GECF's estimate for LNG supply in 2020 Note: Demand growth is for the period 2021-2025.

## 8.7 LNG SHIPPING COST

The LNG shipping cost comprises the LNG charter rate, shipping fuel price and other items. It can represent up to 40% of the LNG delivered price, depending on trade routes and market conditions.

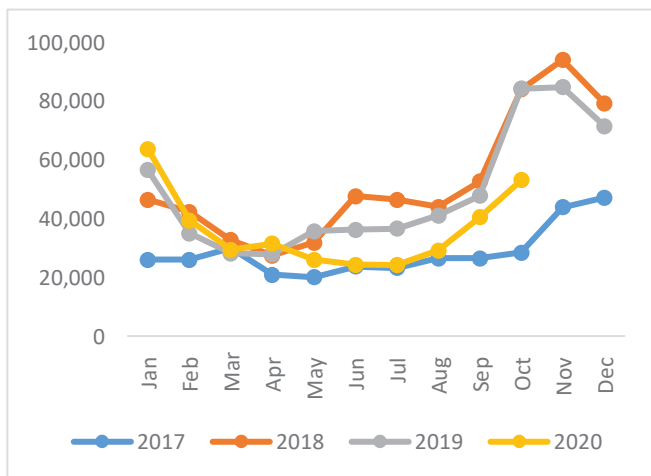
### 8.7.1 RECENT TRENDS

#### CHARTER RATE

In 2019, the average daily LNG spot charter rate for steam turbine carriers fell by 7% y-o-y to 48,800 USD/day. Charter rates increased sharply in the fall of 2019, driven by the approaching winter season, a rising number of LNG cargoes, active usage of LNG carriers for floating storage and concerns about the imposition of the U.S. sanctions on the COSCO shipping company from China.<sup>11</sup>

In the first 10 months of 2020, charter rates averaged 36,100 USD/day (Figure 58).

**Figure 58: Average LNG Spot Charter Rates for Steam Turbine Carriers (USD/day)**

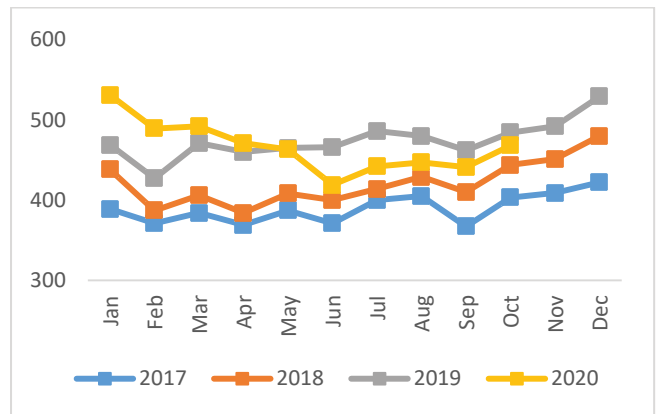


Source: GECF Secretariat based on data from Argus

Two factors had the most impact on shipping market developments. First, in 2019, LNG export cargoes rose by 11% y-o-y to reach 5,598 shipments. This growth, driven by a surge in global liquefaction capacity and LNG trade, led to higher demand for LNG carriers.

However, in the first 10 months of 2020, LNG export cargoes fell by 0.2% y-o-y to reach 4,662 shipments, driven by a decline in LNG demand amid the mild winter season and COVID-19 (Figure 59).

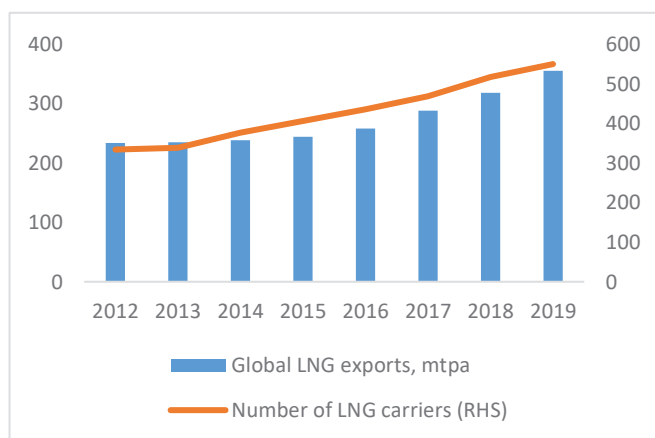
**Figure 59: Number of LNG export cargoes**



Source: GECF Secretariat based on data from ICIS

Second, the supply-demand balance on the spot shipping market was maintained in 2019 and 2020. Charter rates largely depend on the number of LNG carriers available. The increase in global LNG trade requires a larger number of LNG carriers and their shipping capacity. In 2019 and the first half of 2020, 41 and 19 new LNG carriers were commissioned, respectively, with the global fleet reaching 569 carriers of capacity of more than 50,000 cubic meters as of July 2020 (Figure 60). Total capacity of all LNG carriers exceeded 40 mtpa, while the average capacity of LNG vessels is equal to 162,000 cubic meters (71,000 tonnes of LNG).

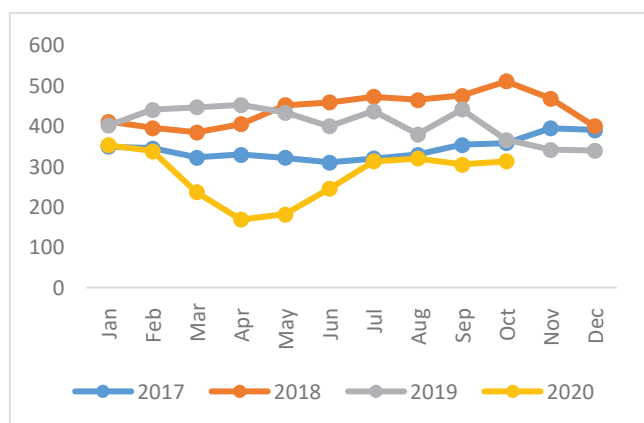
<sup>11</sup> GECF Secretariat. (2020). Expert Commentary - LNG Shipping Market: Shipping Cost Slightly Declining.

**Figure 60: Global LNG Exports vs. LNG Carriers**

Source: GECF Secretariat based on data from ICIS

## SHIPPING FUELS PRICE

In 2019, the average leading shipping fuels price fell by 8% y-o-y to 406 USD/tonne. In the first 10 months of 2020, it dropped by 34% y-o-y to 277 USD/tonne, driven by a fall in oil prices (Figure 61).

**Figure 61: Average Shipping Fuels Price (USD/tonne)**

Source: GECF Secretariat based on data from Argus

### 8.7.2 SHORT TERM PERSPECTIVES

In the short term, there will be an increase in LNG carriers being commissioned against the background of a slowdown in LNG exports driven by COVID-19. As a result, there may be an oversupply of LNG carriers on the spot shipping

market, leading to subdued spot charter rates. However, some factors may prop up demand for LNG carriers. First, the start-up of U.S. LNG plants requires more LNG carriers as LNG deliveries from the U.S. to Asia mean longer trips. Second, market players may use LNG carriers for floating storage ahead of the winter season. Third, market players may prefer to secure medium- and long-term charters with a view to avoiding any shortage of LNG carriers.

In the meantime, the average shipping fuel price is likely to be lower than in recent years because of the fall in oil prices.

Consequently, the market might expect lower LNG shipping costs, which could prop up LNG demand and encourage long-haul LNG supply.<sup>12</sup>

<sup>12</sup>GECF Secretariat. (2020). Expert Commentary - LNG Shipping Market: Shipping Cost Slightly Declining.



# 09

## **NATURAL GAS PRICES**



## 9 NATURAL GAS PRICES

### 9.1 RECENT TRENDS

Global gas, LNG and oil prices across all regional markets slumped in 2019 following two consecutive years of annual growth (see Figure 62). The fall in gas and LNG prices was driven by a mild winter season in the northern hemisphere, slower pace of global gas consumption due to slowed economic growth particularly in China, surge in global LNG exports, high gas and LNG inventories across major markets and strong gas production in the U.S. There was a rebound in oil prices in the last two months of 2019 due to healthy demand particularly in Asia and heightened trade tensions in the Middle East. Furthermore, an interim Phase I agreement signed in January 2020 between the US and China drove prices back up. Mild weather conditions and an oversupplied LNG market continued to put pressure on gas and LNG prices in 2020. This was further exacerbated by the drop in global gas demand due to the impact of COVID-19 and left prices at unprecedented lows.

In the first half of 2020, Asian LNG spot prices and European gas and LNG prices were more than 50% lower compared to the previous year, with the average NBP, TTF, and NEA Spot LNG prices declining by 57%, 53%, and 50% respectively. Daily prices in both regions also converged to below \$2/MMBtu at the end of April and start of May reflecting the great imbalance of market fundamentals.

There has been some price recovery in the second half of 2020. This has been driven by improved market fundamentals. On the demand side, the inherent seasonality of gas demand has been pushing prices upwards as we enter the winter season. Furthermore, industrial and commercial activity returned to relatively normal levels as COVID-19 lockdown measures were lifted in many countries. However, the second

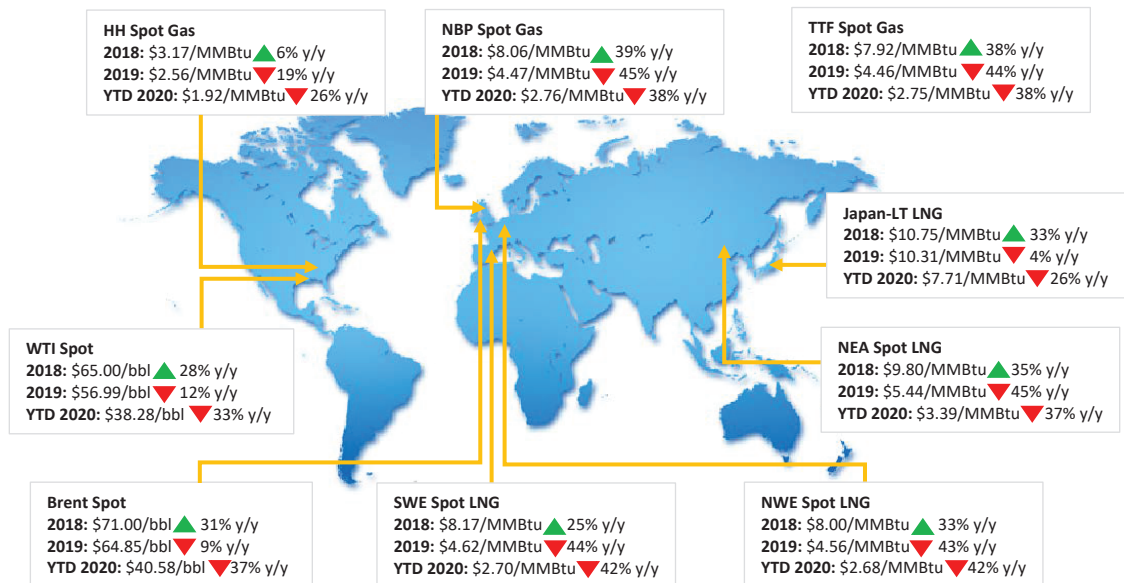
round of lockdown measures have dampened gas demand in these sectors.

On the supply side, there has been several supply issues which were market-driven, weather related and also operational. U.S. LNG supply has been significantly reduced due to a large number of cargo cancellations during the summer, as well as the shutdown of LNG facilities during the Hurricane season. The Cameron and Sabine Pass LNG facilities were shut down at the end of August ahead of Hurricane Laura. In addition, supply uncertainty from Australia's Gorgon LNG facility due to issues with the heat exchangers in Train 2, with speculations that Trains 1 and 3 would have to undergo checks as they utilize the same heat exchangers. However, there will be a phased shut down for inspection in early October and January 2021 respectively, rather than previous notions of inspection in August with timing overlap. On the Norwegian Continental Shelf There have been several operational issues, in addition to routine maintenance activities during the summer, which has reduced gas supply to Europe. The Kollsnes gas processing plant was shut down for a short time following a suspected fire in August. There was also an unplanned shutdown at the Hammerfest LNG facility which is likely to extended to October 1, 2021. In addition, industrial strike action in Norway caused the shutdown of six offshore fields at the start of October and reduced pipeline gas flows to Europe. However, an agreement was reached between the Lederne trade union and the Norwegian Oil and Gas Association on October 9th, so the supply from the shut-in fields was resumed later that month.

<sup>13</sup>GECF Secretariat (2020) Update on Global Gas and LNG Prices in 2020: How has it coped with recent market dynamics?

The next section provides a deeper analysis of gas, LNG and crude oil benchmark prices over the period January–October 2020.

**Figure 62: Natural Gas, LNG and Oil Price Map**



**Note:** YTD represents the period January - October

**Source:** GECF Secretariat based on data from Argus, Refinitiv Eikon and OANDA

## HENRY HUB (HH) SPOT GAS PRICE

The HH spot gas price was consistently low and averaged \$2.56/MMBtu in 2019. This was due to continued robust production in the US, together with mild weather conditions, which curbed gas demand for heating.

Over the period January - October 2020, HH prices were 26% lower y-o-y with an average of \$1.92/MMBtu, driven by mild winter demand and high storage inventories, as well as weak demand particularly in the power sector due to lockdown measures.

HH spot prices increased by 25% m-o-m in October 2020 and was 3% higher y-o-y as the U.S. experienced cooler temperatures which increased heating demand. At the end of October total working gas storage was 8% higher than the previous year, which was lower than storage levels in September.

## EUROPEAN SPOT GAS PRICE (NBP, TTF)

Gas prices in the European gas market last year took a downward turn as it acted as a sink for excess spot LNG, driven by the global LNG supply glut and weak Asian gas prices, which made Europe the more favourable market for exporters from the Atlantic basin. At the end of 2019, European gas storage levels were almost at full capacity.

While there was some recovery in NBP/TTF prices during October–November 2019, the mild winter coupled with already high storage levels weighed on prices. Uncertainty regarding the outcome of Russia-Ukraine transit negotiations ended on December 20, 2019 after a deal was signed between the two parties, which also contributed to the bearish sentiment.



Both TTF and NBP continued to shed value in 2020 due to warmer-than-usual temperatures and higher wind generation. Falling coal and carbon prices also had an influence on TTF prices. COVID-induced weak gas demand particularly in the industrial and power sectors weighed further on prices in the first half of 2020.

However, in the second half of the year, there has been a recovery in European prices driven by a resumption of commercial and industrial activity as lockdown measures were eased, as well as several supply interruptions in Norway's gas supply to the region due to unplanned maintenance and industrial strikes.

TTF and NBP averaged \$2.75/MMBtu and \$2.76/MMBtu, respectively, over the period January-October 2020, and both were about 38% lower y-o-y. However, in September and October, both European gas hub prices were higher y-o-y.

### EUROPE SPOT LNG PRICE (NWE, SWE)

The spot LNG European prices in 2019 closely tracked changes in spot gas prices with the exception of the period September-October when European spot LNG (month-ahead) prices jumped and spot gas prices were at a multi-year low. This was a culmination of several issues including the Dutch government's plan to halt production from the Groningen gas field, reduced flows from Russia due to the E.U. ruling to overrule the European Commission's decision in 2016 to allow greater capacity access to Gazprom via OPAL and extended maintenance activities in Norway's gas fields and pipelines.

Similarly, in 2020, European des prices closely tracked NBP/TTF prices. LNG cargoes flooded European regasification terminals as many were cancelled by Asian buyers declaring force majeure.

Over the period January – October 2020, NWE and SWE LNG spot prices averaged

\$2.68/MMBtu and \$2.70/MMBtu respectively which were both about 42% lower y-o-y

### NORTH EAST ASIA (NEA) SPOT LNG PRICE

In 2019, NEA spot LNG prices started its decline to average \$5.44/MMBtu. This was driven by weaker than expected demand mainly due to mild weather conditions, higher nuclear availability in Japan and South Korea and an abundance of spot LNG supply.

There was an uptick in prices in September-October 2019, in line with higher European spot LNG prices, in order to attract cargoes into Asia in anticipation of higher winter demand. Production issues at the North West Shelf LNG facility in Australia also drove prices higher.

Asian prices were the first to feel the impact of COVID-19 with the first epicentre in China. In February 2020, NEA spot LNG price experienced a 40% drop m-o-m amidst a drastic drop in demand in the industrial and transportation sectors in the region. As lockdown measures eased in China, manufacturing activity resumed and this is reflected in the uptick in March 2020 prices. In April, prices tumbled again as India enforced lockdown measures resulting in a drop in LNG imports.

Since July 2020, there has been a strong upward trend in Asian LNG prices due to a combination of factors including a warmer-than-usual summer, initial uncertainty around supply availability from Australia's Gorgon LNG facility and increased buying activity ahead of the winter season.

Over the first ten months of the year, the NEA Spot LNG price was 37% lower y-o-y, averaging \$3.39/MMBtu. However, in October 2020, it was 2% higher compared to 2019.



## JAPAN LONG-TERM LNG PRICE

The average Japan LT LNG price in 2019 was \$10.31/MMBtu, approximately double the average NEA LNG spot price. This disparity has led to a new era of oil-linked pricing where buyers are seeking to negotiate contracts on the terms of lower slope in the range 11-12%.

The average Japan LT LNG price for January - October 2020 was \$7.71/MMBtu which was 26% lower y-o-y. The decrease in the spot gas and LNG prices was not as pronounced in the Japan LT price as the mechanism smooths the effect of such drastic occurrences over three to six months depending on the formula.

However, the impact of low oil prices has started to take effect on long-term oil-indexed contract gas prices in H2 2020 and will continue to do so in 2021. In October 2020, the Japan LT LNG price averaged \$6.40/MMBtu which was 37% lower y-o-y.

## CRUDE OIL PRICES

As far as oil-indexed contracts are concerned, a look at oil prices is needed, to assess the lagged impact, as seen in Section 4 of this report.

In 2019, Brent spot oil prices fell by 9% y-o-y and averaged \$64.85/bbl while WTI fell by 12% y-o-y

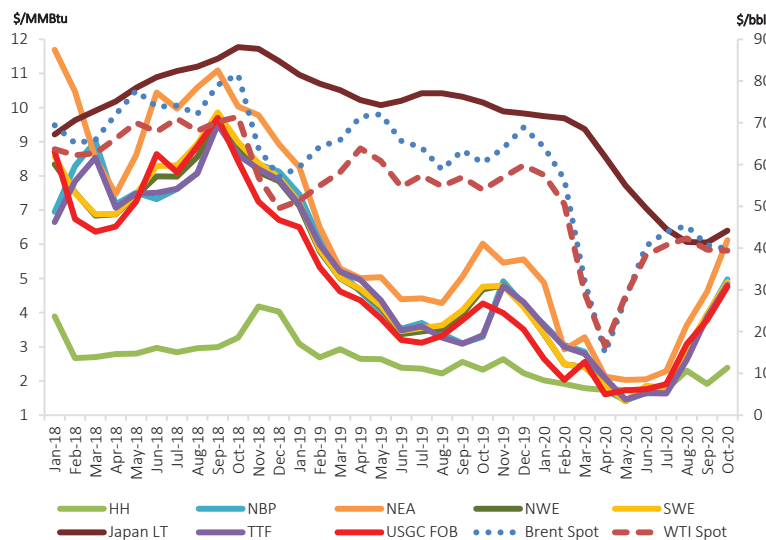
and averaged \$56.99/bbl. This was driven by slowed economic growth and thus lower demand and ongoing trade tensions between the US and China. However, oil prices showed some sign of recovery at the end of 2019 with the US and China reaching an interim Phase I agreement.

Oil prices collapsed in March 2020 due to the oil price war between Saudi Arabia and Russia on top of weakened demand due to COVID-19 lockdown measures. After four consecutive months of decline, oil prices rebounded in May 2020 from lows in April, as OPEC+ production cuts of 9.7 million bbl/d took effect from May 01, 2020, and was extended to July 2020.

Over the first ten months of 2020, Brent and WTI spot prices averaged \$40.58/bbl and \$38.28/bbl respectively which were 37% and 32% lower y-o-y. On the futures market, ICE Brent futures and NYMEX WTI averaged \$42.43/bbl and \$38.51/bbl respectively which were 34% and 32% lower y-o-y.

After climbing for four consecutive months since May 2020 and ICE Brent averaging \$45/bbl in August, oil prices dropped in September and October amidst uncertainties surrounding global economic recovery, and thus oil demand recovery.

Figure 63: Monthly Natural Gas, LNG and Oil Prices



Source: GECF Secretariat based on data from Argus, Refinitiv Eikon and OANDA

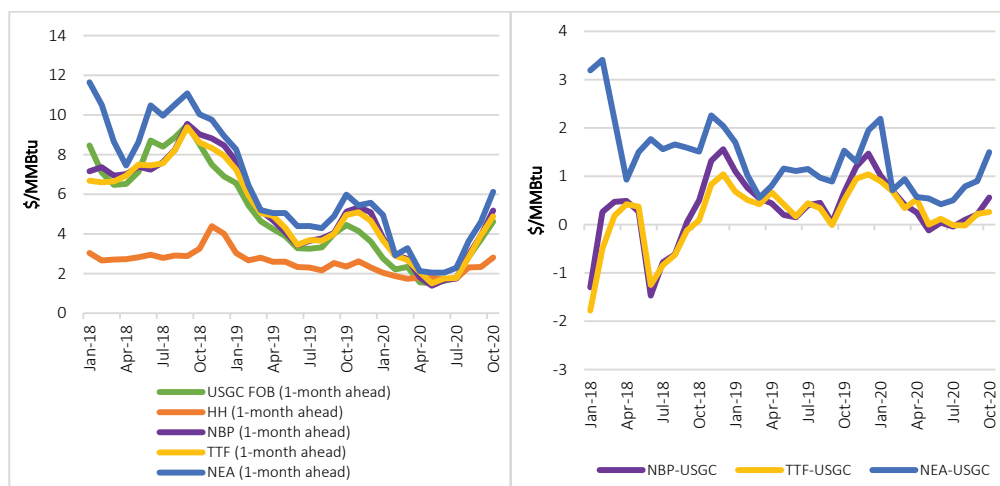
## 9.2 U.S. LNG SPOT PRICE ON REGIONAL MARKETS

This section focuses on U.S. spot FOB LNG prices as quoted by some pricing agencies, Argus and ICIS.

In 2019, the USGC spot FOB LNG fell by 46% y-o-y to \$4.26/MMBtu in line with the global trend in spot gas and LNG prices (see Figure 64). Considering a spot shipping cost of \$1/MMBtu and \$2/MMBtu from USGC to Europe and Asia in 2019 respectively, the USGC spot FOB LNG for most of last year was uncompetitive for delivery into Europe and Asia. The USGC spot FOB LNG price continued to

decline in 2020 driven by an oversupplied LNG market. During the period January to October 2020, the spot FOB LNG price averaged \$2.50/MMBtu, representing a plunge of 42.0% y-o-y. Despite the decline in the price spreads between Asian and European gas/LNG prices, with the U.S. spot LNG prices in Q1 2020, the lower spot shipping costs globally kept the spot U.S. LNG “in-the-money” for delivery into both markets. However, this trend changed during Q2 and Q3 2020 as global gas/LNG prices started to converge, with the HH becoming more expensive than European gas prices between May and July 2020. This led to the vast number of U.S. LNG cargo cancellations, which was discussed in detail in previous sections.

**Figure 64: Monthly U.S. Spot LNG, Asian LNG and European Gas Prices & Spreads**

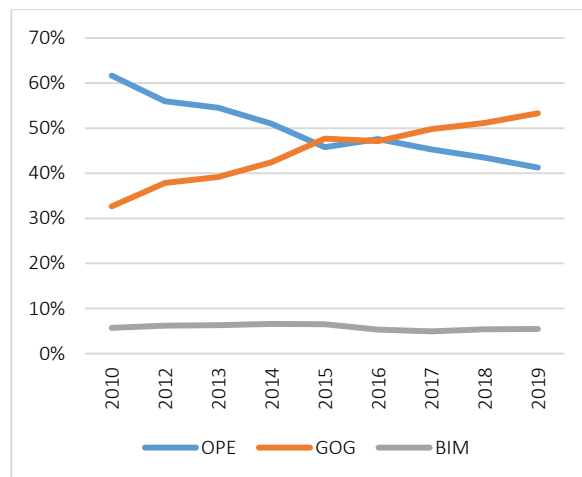


Source: GECF Secretariat based on data from Argus and ICIS

## 9.3 NATURAL GAS PRICING MECHANISMS

Since 2010, the share of gas imports, which has been indexed to oil, has declined progressively in favour of gas-on-gas (GOG) competition. In 2019, the share of GOG competition in global gas imports stood at 53%, exceeding the share of oil price escalation (OPE) for the third consecutive year (see Figure 65). This marked shift in the pricing mechanism towards GOG competition has been mainly attributed to the shift in the pricing mechanism of gas imports in Europe, which is the largest gas importer on a regional basis.

**Figure 65: Trend in Global Price Formation for Total Gas Imports**

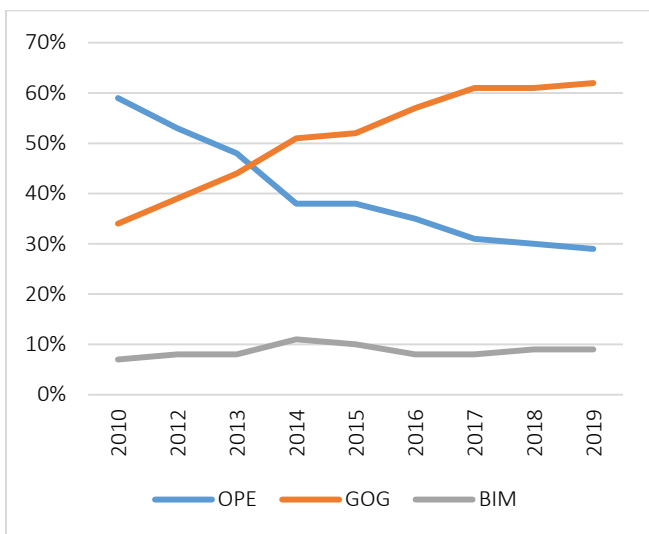


Source: GECF Secretariat based on data from IGU Wholesale Gas Price Survey 2020



In terms of global pipeline gas imports, a similar trend was observed with the share of GOG competition increasing from around 34% in 2010 to 62% in 2019 while OPE declined from 59% to 29% (see Figure 66), again driven by Europe since this region is the largest importer of pipeline gas. Meanwhile, the share of Bilateral Monopoly (BIM) has been relatively stable at around 9%.

**Figure 66: Trend in Global Price Formation for Total Pipeline Gas Imports**



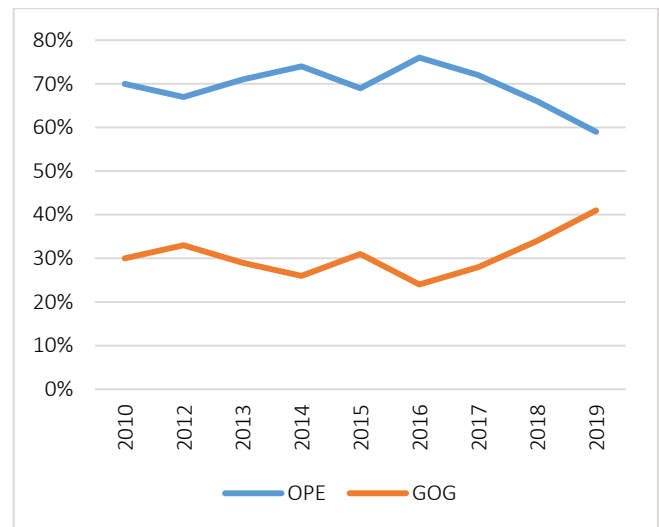
Source: GECF Secretariat based on data from IGU Wholesale Gas Price Survey 2020

For global LNG imports, the pricing mechanism continues to be dominated by OPE but its share has fallen from high of 76% in 2016 to 59% in 2019 (see Figure 67) driven by the growing spot LNG trade, particularly indexed to JKM, and the increasing U.S. LNG exports which are indexed to HH. The dominance of OPE in global LNG imports is attributed to Asia's dominance of global LNG trade under long-term contracts, mainly indexed to oil.

On a regional basis, GOG competition overtook OPE in Europe in 2014 with the share of OPE declining consecutively since then to 25% in 2019. Meanwhile in Asia, the share of gas imports is dominated by OPE which averaged 76% in 2019 (see Figure 68).

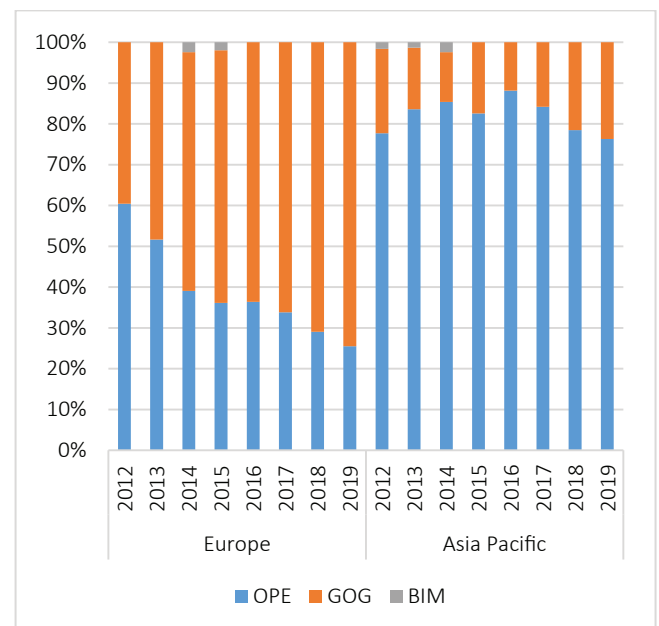
Despite the decline in the share of OPE pricing mechanism in gas trade, due to the increasing gas trade in gas-on-gas and LNG-on-LNG pricing, oil-indexed pricing mechanism is expected to retain its dominant role in global LNG trade since the bulk of LT LNG contracts are indexed to oil.

**Figure 67: Trend in Global Price Formation for Total LNG Imports**



Source: GECF Secretariat based on data from IGU Wholesale Gas Price Survey 2020

**Figure 68: Trend in Global Price Formation for Total Gas Imports**



Source: GECF Secretariat based on data from IGU Wholesale Gas Price Survey 2020

When compared to oil-indexation, hub prices increase the volatility of natural gas prices, which could negatively affect returns on project investment. This could result in underinvestment in the gas industry, and threaten the global security of gas supply.

Recent developments in LNG contracting, coupled with other developments in the gas market, particularly low spot prices, have motivated buyers to pursue several strategies. These include reducing the price of gas imports through diversification of supplies, joint procurement, modifying long term oil-indexed contracts, lowering take or pay levels, reviewing pricing formula, relaxing destination clauses, shortening the duration of contracts and establishing independent LNG pricing mechanisms through hubs.

Nevertheless, in the gas industry, long-term contracts indexed to oil are the best way to secure long-term financing on capital-intensive gas projects and as such the importance of long-term oil indexed contracts was emphasized in the Malabo Summit Declaration. It should be noted that the recent trends in long-term oil-indexed contracts in 2020 confirm the preference of the buyers for such a pricing mechanism given the stability it provides.

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## CONCLUSIONS & PROSPECTS



## 10 CONCLUSION & PROSPECTS

The global natural gas industry experienced modest growth in 2019 after an exceptionally strong 2018. The slower-paced growth in 2019 was driven by mild weather conditions and an oversupplied LNG market. In 2020, these conditions have persisted and were further exacerbated by the impact of the COVID-19 pandemic. Already declining gas and LNG spot prices reached unprecedented lows in 2020, forcing huge investment cuts in the upstream sector and widespread postponement and cancellation of FIDs for new LNG projects. Crude oil prices also took a huge hit, even dipping into negative territory. In the second half of 2020, prices have shown some recovery due to OPEC+ production cuts and renewed optimism for oil and gas demand, as countries eased lockdown measures and economies began to resume normal productivity. Moreover, there is increased optimism in energy markets as potential vaccines with more than 95% effectiveness have been announced.

Despite this recovery, prices are unlikely to reach pre-COVID levels. There is still concern about sustained demand growth as the second round of lockdown measures are implemented. The level of recovery will ultimately depend on policy decisions taken by governments to mitigate the negative impact on their economies and health of their people, and the speed of the development and distribution of vaccines.

Natural gas has been through a turbulent time as have all other commodities markets impacted by the pandemic. But the gas industry has shown itself to be resilient and continues to support access to an affordable and abundant energy source. Furthermore, natural gas is challenged by certain negative views towards the fuel that claim it is a fossil fuel that should remain in the ground to help solve the issue of greenhouse gas emissions. As far as GECF is concerned, the environmental issues are factored into the promotion of natural gas as a best fit in the energy transition process.

While the revenue streams of GECF Member Countries have been impacted in the same way as other market players, they have shown their resilience in the face of the current market adversity and have continued to prevail.

GECF has maintained its position and leading role in the gas market. At the same time, GECF also recognizes the critical role of cooperation between gas producers and consumers in order to maintain market stability and work towards a low-carbon future. In this regard, and while respecting the sovereign right of Member Countries over the use of their natural gas resources, Member Countries need to work together to implement joint mechanisms that will help overcome the current difficult situation on the natural gas market.

The impact has been felt by all market stakeholders, with no winners, only joint losers, with some market players such as GECF Member Countries showing more resilience than others. GECF believes there are opportunities for cooperation to promote this source of energy, and GECF Member Countries are determined to continue such promotion.

Therefore, it becomes imperative that the world should have one voice for the stability of the gas market, with cooperation among all market players (gas producers, consumers, lenders, producers of other energy sources, policy makers). Such cooperation shall be reflected in collaborative actions: to revive investment in the gas industry; to adopt technologies that allow the safe exploitation of natural gas resources with regard to environmental issues; and to allow natural gas to play its role as a destination fuel in the energy transition and support intermittent renewable energy sources. In a nutshell, the lessons learnt point to a win-win cooperative spirit with benefits for all.

GECF, as an inter-governmental organization, is the ideal platform to ensure such cooperation (cooperation being the core value of GECF as stipulated in its Long-Term Strategy), thanks to



its credentials as a group of reliable suppliers with solid relations with their partners worldwide.

As outlined in the report, the gas industry is currently facing several challenges including gas demand erosion, reduced investment in gas infrastructure, market vulnerability, the high share of shipping costs in the LNG delivered price, unprecedented low gas and LNG prices, weakening oil-indexed slopes and new trends in gas and LNG contracting. In spite of this, the gas market has remained resilient and reliable.

In this regard, GECF sees that one of the opportunities for cooperation is to promote this blessed source of energy, and GECF Member Countries are determined to continue such promotion. During the Fifth Summit of Heads of State and Government of the GECF Member Countries held in Malabo, Equatorial Guinea in November 2019, Heads of State and Governments of Member Countries of the GECF resolved their common determination to:

- Promote natural gas as an affordable, abundant and reliable source of energy by encouraging the expansion of natural gas utilization domestically and internationally in different forms and sectors.

- To enhance the contribution of natural gas as a destination fuel for climate change mitigation and adaptation, and the protection of the environment.

One of the instruments to implement such promotion is the GECF Annual Workshop on the Promotion of Natural Gas Demand, which is one of the powerful GECF platforms to bring awareness to the world about the vital role of natural gas in the lives of people and economies of countries. This annual workshop is open to all market stakeholders to exchange ideas and define actions to reach the objective of a greater expansion of natural gas worldwide and sector-wise.

GECF fully supports industry initiatives to make natural gas cleaner through the implementation of industry standards and new technologies. GECF is very active in the activities of several international organizations and industry stakeholders including G20, UNFCCC, OPEC, UNECE, ASEAN, IRENA where it stands as a strong pillar for the natural gas industry.

GECF participated in the G20 Energy Ministerial Meeting in September 2020 and emphasized that “The Forum fully supports G20 commitments towards clean and environmentally friendly energy sources, to promote economic development with a smaller carbon footprint.”

The final G20 Communiqué directly referred to the participation of GECF and other international organizations in strengthening energy security and market stability. In addition, at the first G20 Energy Sustainability Working Group (ESWG) Meeting in March 2020, GECF supported the Circular Carbon Economy framework geared towards reducing, reusing and removing greenhouse gases and highlighted the need for greater dialogue on the effective and flexible use of natural gas globally.

GECF is an observer organization in UNFCCC. It has joined the efforts of its members and reiterates its support for the global ambition to fight global warming, reiterating the crucial role of natural gas as a destination fuel and the safest way to transition to a greener economy. At the COP25 meeting in Madrid in December 2019, GECF reiterated its position that “Natural gas is a balanced solution that contributes to reducing carbon intensity and pollution resulting from energy-related activities, supports access to modern energy, improves availability and reliability of supply, and provides competitive and affordable energy.” In this regard, GECF’s Environmental Actions Framework was initiated for Member Countries to share best practices in dealing with environmental challenges and reducing the carbon footprint of natural gas.



Moreover, GECF participates regularly in UNECE's debates on the gas industry and sustainable development within the UNECE Group of Experts on Gas.

Cooperation between GECF and gas consuming countries is not new. Much joint work links GECF with ASEAN and the Economic Research Institute for ASEAN and East Asia (ERIA), highlighting the role of natural gas towards greening society in the region.

IRENA has also joined the club of GECF partners and was given the opportunity to share its views on the energy transition and issues related to the green economy, through the GECF monthly gas lectures series. Further collaboration is expected. These non-exhaustive partnerships demonstrate the willingness of GECF to engage in open dialogue with energy industry leaders and cements its active role in natural gas advocacy. These dialogues demonstrate the benefit to all of coordinated actions, recognizing the crucial role of natural gas in this regard.

GECF will continue working to foster stronger partnerships with other international organizations such as IGU and GIIGNL to promote natural gas and target partnerships with regional bodies in Africa and Asia such as AFREC, APPO, and ASEAN.

GECF recognizes that there are opinions which state that although natural gas is cleaner than oil and coal, it is still a hydrocarbon emitting greenhouse gases. However, GECF recognizes that it is the cleanest fossil fuel and can strongly support the energy transition through its flexibility as a backup source for intermittent renewable energy sources. Furthermore, natural gas is an ideal alternative for coal and will play a significant role in reducing air pollution and thus, is perfectly compatible with the global climate change agenda and particularly in major consuming countries such as China. In this regard, GECF Member Countries reiterate their continuous robust support to accompany

consuming countries in their energy mix targets by supplying natural gas.

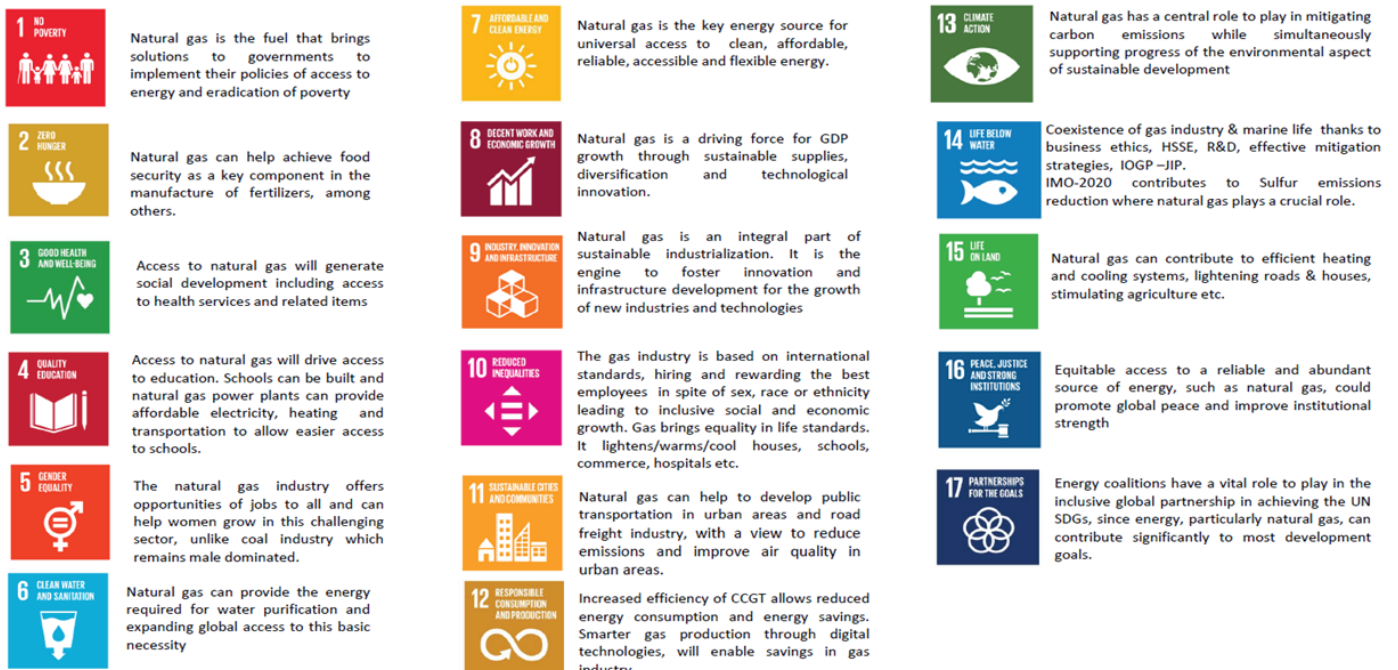
Based on the above, we believe that all market stakeholders have a role to play in sustaining the development of nations via access to cleaner energy.

Accordingly, international banks need to factor into their lending strategies the crucial role of natural gas in the sustainable development of countries, building and reinforcing their economies and helping to create opportunities for gas demand wherever and whenever it is needed. Regions and countries deprived of access to electricity and clean energy such as sub-Saharan Africa should all have access to infrastructure and integrated systems to enable natural gas to reach them.

Natural gas projects are capital-intensive, therefore the stimulation of adequate levels of investment across the gas value chain is required to guarantee the security of gas supply to the market, which cannot occur without the coordinated actions of all. We believe that long-term oil-indexed contracts can be instrumental in reviving investment in the industry and promoting market stability. Furthermore, history has illustrated that oil-indexed contracts are competitive with spot prices, and can counter the volatility of the spot market, whereby providing price stability to both producers and consumers.

There is no doubt that natural gas is a destination fuel for the world at large and can improve the lives of people particularly in developing countries. In this regard, Figure 69 below illustrates our views on the significant role of natural gas in achieving the UN's Sustainable Development Goals (SDGs).

**Figure 69: GECF View on the Role of Natural Gas in UN SDGs**



Source: GECF Secretariat





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Any comments or questions regarding this report can be sent to:

**MS. MAHDJOUBA BELAIFA**

Head of Gas Market Analysis Department  
Gas Exporting Countries Forum

Tornado Tower, 47th & 48th Floors, West Bay, Doha, Qatar

P.O. Box 23753

Tel.: +974 44048432

Email: [mahdjouba.belaifa@gecf.org](mailto:mahdjouba.belaifa@gecf.org)







# GECF

Gas Exporting Countries Forum  
Gas Market Analysis Department

## **CONTACT US**

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GECF Headquarters | P.O. Box 23753  
Tornado Tower | 47th & 48th Floors  
West Bay | Doha  
[www.gecf.org](http://www.gecf.org)