Global gas production amid energy transitions: The growing role of Africa, Eurasia, and the Middle East through 2050

GECF

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1- Introduction

Amid global energy evolutions, natural gas has emerged as a cornerstone in addressing rising energy demands, underpinned by population expansion, economic growth, and the urgent development priorities of emerging economies striving to achieve the Sustainable Development Goals (SDGs). Its dual advantages as a dependable energy source and a comparatively lower-carbon alternative to traditional fuels underscore its pivotal role in reconciling energy security with climate imperatives. Yet, fulfilling this demand hinges on the stability and diversification of global supply—a challenge shaped by intricate dynamics, including uneven reserve distribution, infrastructure investments, competing regional energy policies, and disparities in technological innovation.

According to the 9th Edition of the GECF Global Gas Outlook 2050 (March 2025), global production is projected to rise to 5,317 billion cubic meters (bcm) by mid-century, reflecting a steady annual growth rate of 1%. Notably, this growth is marked by shifting geographies: while North America remains the dominant producer today, accounting for 31% of global gas production, its share is anticipated to decline as emerging production hubs gain momentum.

The commentary will focus on three points over the outlook: the consistent production growth in the Middle East across all decades of the forecast period, Africa's emergence as a gas production growth engine during the 2030s, and North America's gas production growth inflection point, as the region transitions from rapid expansion to plateau and potential decline following its remarkable shale revolution.

2- Natural gas production outlook to 2050

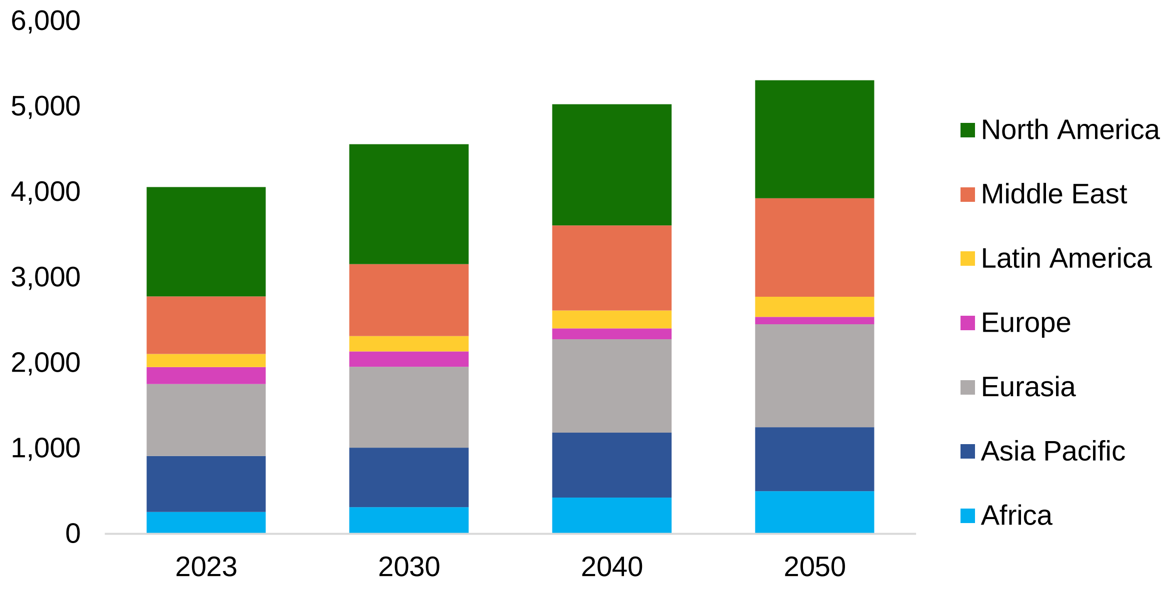
The 9th edition of the GECF Global Gas Outlook projects natural gas production to reach 5,317 bcm by 2050, reflecting a substantial increase of nearly 1,240 bcm or 30% compared to 2023. This growth aligns with the anticipated rise in global natural gas demand. The production outlook must be understood within the broader context of global efforts to reduce energy-related emissions and meet the rising global energy demand in developing countries and the energy needs of new technologies such as data centers and artificial intelligence.

Production growth is anticipated across most regions, driven by domestic demand and export opportunities, with Europe being the sole exception due to ongoing declines in domestic reserves and maturation of producing assets. The top three producing regions by 2050 are projected to be North America, Eurasia, and the Middle East[1], collectively accounting for over 70% of global natural gas supply.

North America is expected to maintain its position as the world's largest natural gas producer, with its output projected to reach 1,382 bcm by 2050. However, its path to mid-century involves a significant slowdown from the rapid expansion driven by the shale revolution, eventually reaching an inflection point, a trend analysed further in the section 'The North American production growth inflection point'. Eurasia will solidify its role as the second-largest producing region, reaching 1,208 bcm by mid-century, driven by expansions in Russia, followed by Turkmenistan and Azerbaijan, and efforts to diversify export routes and increase domestic consumption. The Middle East is set to become the third-largest producing region, with production rising to 1,155 bcm by 2050. This increase is underpinned by the region's abundant reserves and meeting the growing global LNG demand.

[1] *Regional definitions:*
***North America**: Canada, Mexico, and the United States.*
***Eurasia**: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.*
***Middle East**: Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen.*

Figure 1. Global natural gas production outlook by region, 2023-2050 (bcm)



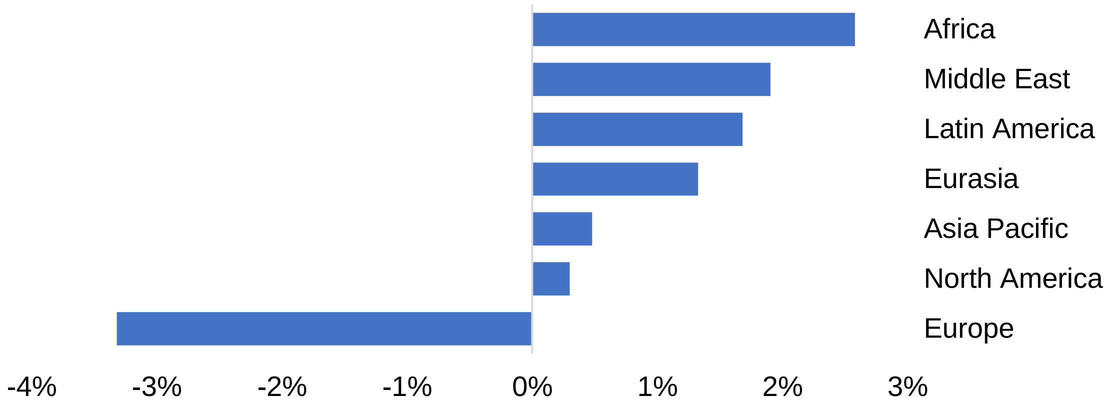
Source: 9th Edition of the GECF Global Gas Outlook 2050

The growth trajectories of natural gas production vary significantly across regions through 2050 as illustrated in Figure 2, revealing a shifting regional performance. Africa emerges with the fastest growth momentum, with a projected compound annual growth rate (CAGR) of 2.5% - more than double the global average of 1%. This robust expansion reflects the continent's vast untapped potential. The Middle East follows closely with a 2.0% CAGR, also outpacing the global average. Latin America and Eurasia show strong but more moderate growth patterns, with CAGRs of 1.6% and 1.3% respectively. In contrast, both Asia Pacific and North America are projected to experience a more subdued growth, with CAGRs of just 0.5% and 0.3% respectively - falling well below the global average. On the contrary, Europe stands alone as the only region facing contraction, with production declining at an annual rate of 3.1% through 2050.

When viewed in terms of cumulative growth by 2050 compared to 2023 levels, these divergent trajectories become even more pronounced. Africa is projected to almost double its production with a remarkable 99% increase, while the Middle East expands by 70%. Latin America and Eurasia will grow substantially at 52% and 42%

respectively. Asia Pacific's more modest 14% growth and North America's limited 7.8% increase highlight the shifting center of gravity in global gas production. Meanwhile, Europe's gas production contracts by 58%.

Figure 2 Global natural gas regional production growth rate, 2023-2050 (%)



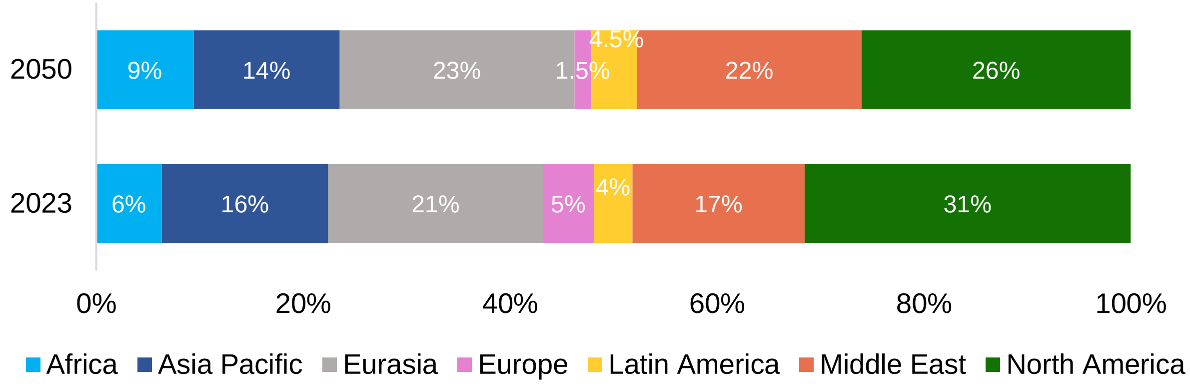
Source: GECF Secretariat based on data from the GECF GGM

The realization of this production outlook hinges on several factors. Investment requirements are substantial, with the need to secure sufficient capital for exploration and development activities. The global natural gas cumulative investment requirement to 2050 is projected to reach USD 11.1 trillion with USD 10.4 trillion allocated to the upstream segment.

3- Regional production growth and decadal trends to 2050

The global natural gas production landscape is projected to transform into a more diversified and geographically balanced supply base. While North America remains the largest producer with 31% of global gas as shown in Figure 3, its growth is expected to add only 107 bcm through 2050. Consequently, North America's market share is projected to decline to 26% by mid-century as other regions accelerate production.

Figure 3 Natural gas production contribution forecast by region, 2023 and 2050 (%)

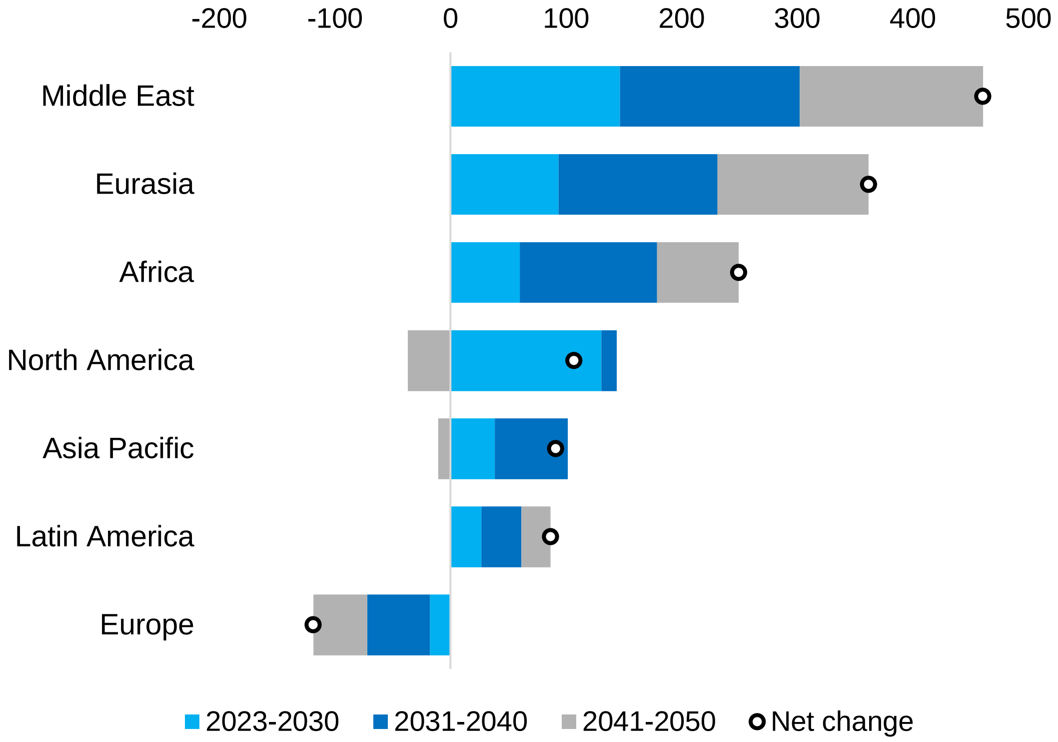


Source: 9th Edition of the GECF Global Gas Outlook 2050

Africa, Eurasia, and the Middle East, which collectively accounted for 44% of global gas supply in 2023, are set to experience an unprecedented 1,072 bcm incremental supply increase through 2050. This expansion will represent 87% of total global production growth, consolidating these regions' positions as the dominant players in natural gas markets. By mid-century, their combined market share is expected to exceed 54%, signalling a fundamental shift in global production dynamics.

To understand how this transformation will unfold over time, the following analysis examines regional natural gas production growth across three distinct periods—this decade, the 2030s, and the 2040s—as illustrated in Figure 4. This temporal perspective reveals three key trends that will shape the global gas landscape: the Middle East's consistent growth trajectory throughout the forecast period, Africa's emergence as a major production hub during the 2030s, and North America's production growth inflection point.

Figure 4. Natural gas production growth outlook by region, 2023-2050 (bcm)



Source: 9th Edition of the GECF Global Gas Outlook 2050

The Middle East is set to lead incremental gas production growth along the forecast period to 2050

The Middle East is projected to add 461 bcm to global gas production through 2050, showing remarkable growth across all three decades of the forecast period. This expansion will be driven by five key countries, each with distinctive growth trajectories. Qatar is projected to reach 300 bcm by 2050, a 77% increase from 2023 levels. Saudi Arabia's production will nearly double to 160 bcm, while the UAE will achieve similar growth to exceed 90 bcm. Iraq is set to emerge as a significant player with production surpassing 60 bcm, while Iran will leverage its vast resources to reach approximately 400 bcm by mid-century.

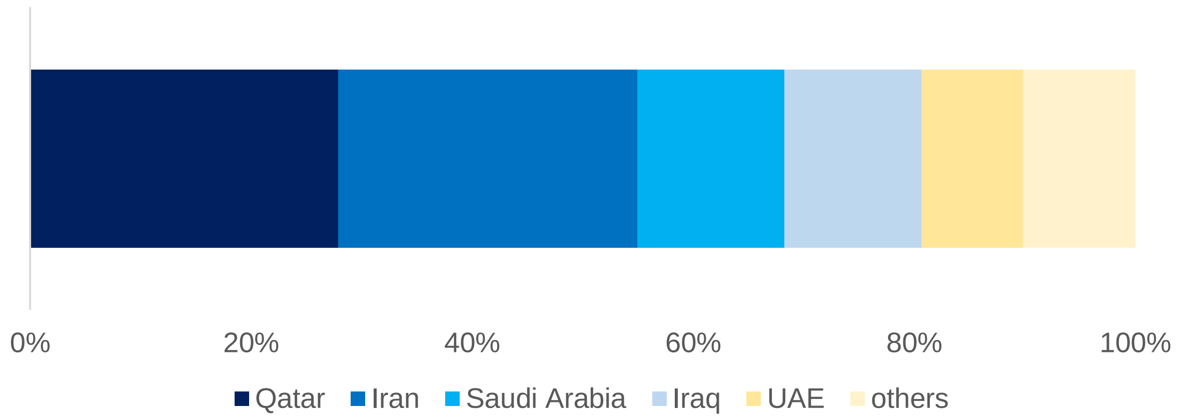
Qatar's growth to 300 bcm by 2050 will be anchored in its massive North Field expansion projects. The country led regional investment in 2023, accounting for 45% of the Middle East's upstream gas spending with $9.6 billion. The North Field East Expansion and North Field South Expansion represent cornerstone developments that will collectively add over 70 bcm of annual production capacity.

Saudi Arabia has outlined ambitious plans to increase gas production by 60% from 2021 levels by 2030 projected to reach 125 bcm, with further growth to 160 bcm by 2050. This expansion is supported by huge investment, including a lifecycle commitment exceeding $100 billion for the Jafurah field alone. The kingdom's strategy encompasses both conventional developments, including the Ghawar Haradh project and Hawiyah gas plant expansion, and a significant push into unconventional resources. The Jafurah shale gas project, expected to commence production in 2025, will play a pivotal role in this growth, contributing approximately 26 bcm annually at its peak in 2030s.

The UAE is positioned to nearly double its gas production to over 90 bcm by 2050 through a diversified development approach. Major growth drivers include the Hail & Ghasha sour gas developments and Dalma Gas project. The UAE is also advancing unconventional gas production, having started gas production from its Ruwais-Diyab field in 2020, and aims to unlock an estimated 13 tcm of unconventional resources through continued development of tight and shale formations.

Iraq represents one of the region's promising growth stories, with production projected to exceed 60 bcm by 2050. The country's expansion benefits from favorable economics. Key projects scheduled to start by 2030 *include Akkas, Khor Mor, Mansuriyah, Nahr bin Umar, and Zubair*. Iraq is also focusing on capturing associated gas through processing plants as part of the Gas Growth Integrated Project, with associated gas expected to provide 20 bcm by 2040.

Figure 5 Natural gas production growth in the Middle East by country, 2023-2050 (%)



Source: GECF Secretariat based on data from the GECF GGM

The African gas growth decade (2030s)

Africa is projected to experience its most rapid natural gas production expansion during the 2030s, with the continent expected to add approximately 250 bcm through 2050. Remarkably, nearly half of this growth, about 120 bcm, will occur during the 2030s alone, establishing this period as Africa's transformative decade for gas development.

Mozambique will serve as the primary engine of continental growth, with its Rovuma, Mozambique LNG, and Prosperidade LNG projects reaching full capacity during this period and contributing approximately 55 bcm annually. These developments will tap the country's vast offshore resources in the Rovuma and Mozambique basins, which hold an estimated 4.2 tcm of recoverable gas. Tanzania will complement this East African expansion with its Tanzania LNG project adding approximately 14 bcm annually, further diversifying the region's production.

West Africa will see significant development with Mauritania's Bir Allah project contributing up to 10 bcm annually, while neighboring Senegal develops its Yakaar-Teranga resources to add nearly 8 bcm. Nigeria, holder of Africa's largest natural gas reserves at 5.9 tcm, will accelerate the development of offshore resources while expanding domestic infrastructure through projects including the Obiafu-Obrikom-Oben and Ajaokuta-Kaduna-Kano gas pipelines. Additionally, the development of NLNG Train 7, UTM offshore LNG, and Assa North projects. Furthermore, associated gas production is expected to grow by 10 bcm during the decade.

North African producers will continue to play a vital role in the continent's gas portfolio. Algeria will maintain production momentum through developing both conventional and unconventional resources, with unconventional production expected to begin in the early 2030s. Egypt will focus on offshore exploration, building on recent successes in the North Marakia block and North Alexandria concession. Libya aims to double its gas production through projects like Bouri Gas Utilisation and renewed exploration in the Ghadames Basin.

By the end of the decade, Africa's offshore production will dominate the continent's gas portfolio, accounting for over 60% of total gas production compared to just 35% in 2023 driven by the offshore production projects from the emerging producers in East and West Africa.

The North American production growth inflection point

North America's natural gas production, after decades of extraordinary growth, is projected to reach a significant inflection point beyond 2030. The region is expected to continue its impressive growth trajectory through this decade, adding 130 bcm to reach approximately 1,405 bcm by 2030 from the 2023 level of 1,275 bcm.

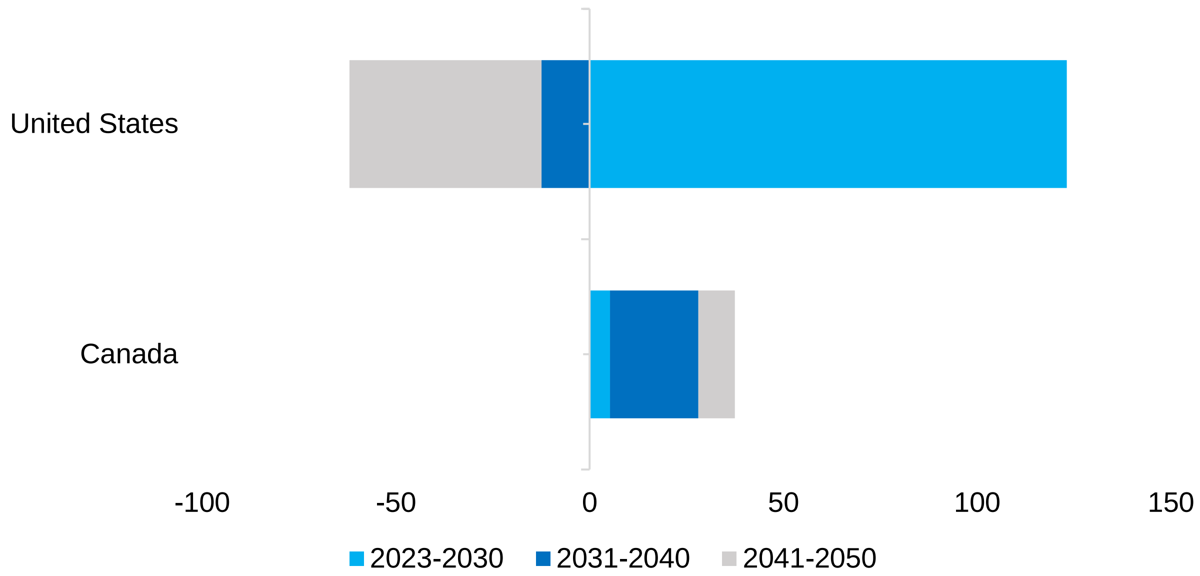
This projected growth builds on North America's remarkable unconventional gas boom, which saw annual growth rates of 14% during the early 2010s as the shale revolution transformed the energy landscape. Even as energy prices weakened in the latter half of that decade, production continued expanding at 8% annually. However, a telling sign of structural change emerged after 2020 when growth moderated to just 5% despite stronger commodity prices in 2021-2022—suggesting the region's gas production is approaching maturity.

Beyond 2030, North America faces significant headwinds as existing unconventional assets experience natural decline. These assets, which accounted for 1,108 bcm in 2023, are projected to decline at approximately 11% annually, falling to just 90 bcm by 2040 and 45 bcm by 2050. While new field developments will partially offset these declines, they will increasingly serve to maintain rather than grow production levels. Unconventional gas production is expected to peak at approximately 1,200 bcm in the late 2030s before declining by about 80 bcm to 1,120 bcm by 2050.

The United States will drive this regional pattern, reaching its production peak in the 2030s before entering a period of gradual decline. As illustrated in Figure 6, production from the United States is projected to grow robustly by around 120 bcm during 2023-2030, followed by a 12 bcm decline during 2031-2040, and then a more significant 50 bcm decline in the 2041-2050 period. It's worth noting that this outlook was released before the United States imposed significant tariffs on April 2, 2025, which may impact export-oriented production growth. The introduction of these tariffs, particularly considering China's response measures on LNG imports from the United States, creates additional uncertainty for export-oriented production growth in the United States. Furthermore, recent oil price declines stemming from recessionary concerns could further slow the unconventional producers in the near term, especially if prices fall below the $45 per barrel threshold that many consulting firms consider the breakeven point for shale production in the United States.

Canada, conversely, is expected to continue growing throughout the forecast period, primarily through developments in the Montney Play and expansions in Spirit River and Duvernay. However, these Canadian gains will only partially offset U.S. declines, resulting in North America's combined production (including Mexico) reaching 1,380 bcm by 2050—approximately 40 bcm lower than its 2040 peak. These regional dynamics will contribute to North America's share of global production decreasing from 31% in 2023 to 26% by mid-century.

Figure 6 Natural gas production growth outlook in Canada and the United States, 2023-2050 (bcm)



Source: GECF Secretariat based on data from the GECF GGM

4- Conclusion

The global natural gas production landscape is projected to undergrow a fundamental transformation, with Africa, Eurasia, and the Middle East poised to become the dominant sources of supply by 2050 accounting for 54% of global gas production. This shift will reshape trade flows, investment patterns, and geopolitical relationships in the energy sector.

This transformation offers significant benefits for the global energy system. The projected growth in Africa, Eurasia, and the Middle East will create new economic opportunities in these regions while enhancing global energy security through greater supply diversification. The resulting geographic distribution of gas production will strengthen the resilience of gas markets. This diversification offers a strategic importance in the era of increasing trade barriers and tariffs. The April 2025 tariffs imposed by the United States and subsequent international responses have demonstrated how concentrated supply chains remain vulnerable to geopolitical intervention.

By contrast, the more balanced production landscape projected through 2050 provides importing nations with significantly greater optionality in sourcing their gas supplies. This flexibility allows them to mitigate the impact of trade restrictions and adapt to shifting geopolitical circumstances. For consumers worldwide, this diversification represents a strategic advantage that enhances energy security in an increasingly complex global environment.

References:

- GECF Global Gas Outlook 2050, 9th Edition.
- Rystad Energy