
Rethinking corporate decarbonization

**From enterprise targets to
product strategies**



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About the authors

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Introduction

Strategy& Middle East in collaboration with the World Future Energy Summit, is proud to present this report about the important changes that energy companies must make from corporate carbon accounting to product carbon accounting. That shift is a result of policies from international bodies and governments that seek to reduce carbon emissions. The new policy environment provides commercial opportunities for energy companies in the Gulf Cooperation Council (GCC) countries. GCC energy companies generally offer lower carbon intensity products than their competitors. Using that inherent advantage and the frameworks in this report, GCC energy companies can get ahead of the competition.

EXECUTIVE SUMMARY

As governments globally introduce policies to reduce and mitigate greenhouse gas (GHG) emissions, energy companies face increasing pressure to shift from broad emissions reduction targets to specific strategies that focus on the carbon footprint of individual products. These changes require companies to rethink how they measure, report, and mitigate carbon emissions.

These new rules present a significant opportunity for energy players in Gulf Cooperation Council (GCC) countries.¹ That is because their products typically have a lower carbon intensity compared with those of their global competitors. GCC energy players now have several opportunities: to offer lower-carbon products that affect almost all downstream users; to guarantee their products a long-term route to market; and to attract investment in financial and human capital.

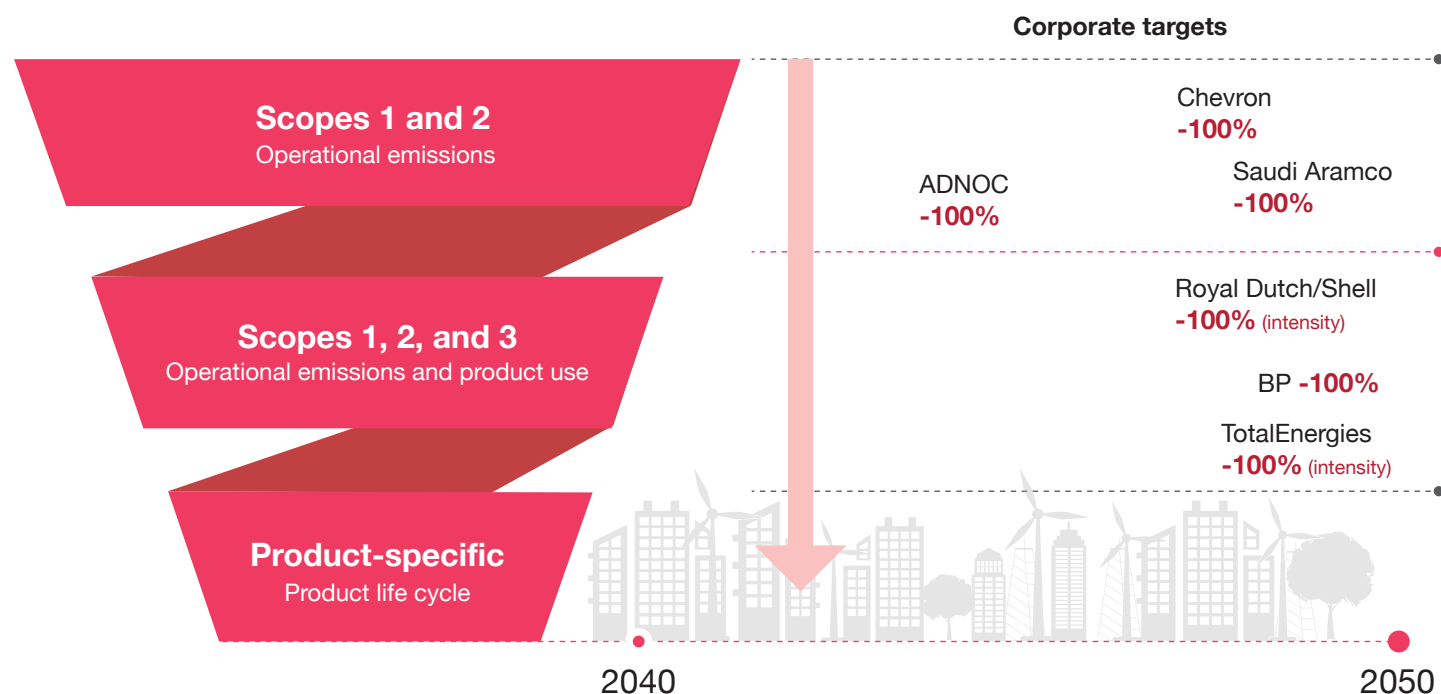
The move into product-level carbon accounting comes with challenges. Many companies are already struggling to establish consistent, efficient, and credible carbon accounting and reporting frameworks for their companies and have not yet focused on accounting for individual products. Nonetheless, the direction for future carbon policies is clear, and GCC energy companies that get ahead of this trend can create a strong competitive advantage for themselves.

FROM ENTERPRISE-LEVEL TO PRODUCT-LEVEL DECARBONIZATION

Many global energy companies have set ambitious goals for reducing Scope 1 and Scope 2 emissions, with some extending their efforts to Scope 3 (see *Exhibit 1*).² These efforts target measurement and reporting of corporate-level carbon emissions. Given the scale of their emissions, major energy players in the GCC are also now obligated to report their overall carbon emissions as part of national biennial carbon inventory submissions required under the United Nations Framework Convention on Climate Change guidelines. However, national and regional carbon policies are still under development. Energy products, being truly global commodities, often fall under the scrutiny of policies developed far beyond their country of production.

EXHIBIT 1

Leading energy companies globally have ambitious carbon emissions targets



Note: Absolute emissions unless noted.
Source: Strategy& analysis

New carbon policies and regulatory frameworks are increasingly emphasizing the carbon footprint of products (see *Exhibit 2*). This shift reflects demand for transparency regarding the emissions associated with, or embedded in, individual products along their entire value chain—from extraction of raw materials, to processing, to manufacturing, to logistics, and even at end of life.

EXHIBIT 2

New policies and regulatory frameworks are focusing on the carbon footprint of products

	Product-level?	Mandatory?	Oil and Gas products?	Oil and Gas derivatives?	Global scope?
Carbon Border Adjustment Mechanism (E.U.)				(Petrochemicals post 2026)	(All imports)
Foreign Pollution Fee Act (U.S.)					(All imports)
Science-based targets					
2023 GHG Strategy (International Maritime Organization)					
Carbon Offsetting and Reduction Scheme for International Aviation (International Civil Aviation Organization)					

Note: GHG=greenhouse gas.
Source: Strategy& analysis

For example:

- **The European Union's CBAM (Carbon Border Adjustment Mechanism).**³ Launched in 2023, the CBAM initially obliges importers to the E.U. of carbon-intensive products—such as steel, fertilizers, and hydrogen—to report their embedded carbon intensity along the entire value chain, including indirect and feedstock materials (Scope 3 emissions). The CBAM does not allow carbon offsets, nor does it allow reallocation of decarbonization efforts outside the direct value chain of the product itself. Eventually, the CBAM will place a tax on products above a certain threshold of carbon intensity to ensure that high-carbon products cannot find a market in the European Union.
- **CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation).**⁴ Developed by the International Civil Aviation Organization, CORSIA requires airlines to mitigate, or offset, CO₂ emissions above 2019 levels. Although focused on aviation, it pressures energy producers—for which jet fuel is just one product stream coming from a typical refinery—to reduce the carbon intensity of their products.

Other laws and policies, such as the U.S. Foreign Pollution Fee Act (FPFA) and the International Maritime Organization's (IMO's) Strategy on Reduction of GHG Emissions from Ships,⁵ further emphasize product-specific carbon standards. These examples highlight a clear global trend in carbon policies and regulatory frameworks: the transition from broad corporate emissions goals to stringent, product-level carbon accounting.

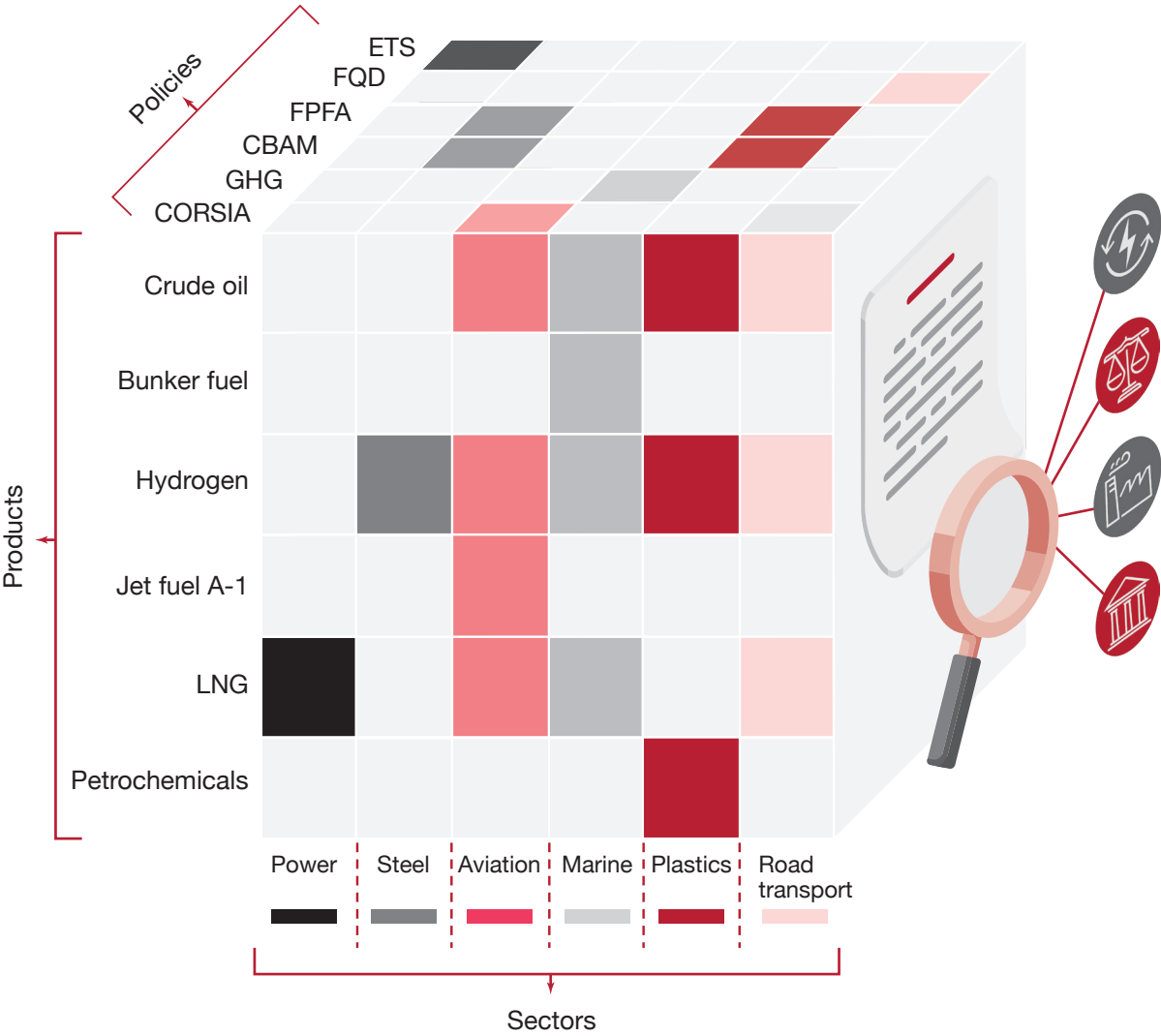
In response to these trends, Strategy& has developed a 3D framework that represents a real-time view of the latest global policies affecting sectors and products (see *Exhibit 3*). Our framework enables GCC energy companies to align carbon accounting and emissions mitigation efforts with regulatory demands and market expectations. The 3D framework allows forward-thinking companies to respond dynamically to policy shifts and stakeholder demands, positioning such companies ahead of competitors that adhere to traditional enterprise-level emissions goals.

Our 3D framework represents a significant advantage for GCC energy exporters. It adds a new commodity pricing dimension, and it signals the need for energy companies to craft more detailed carbon accounting and mitigation strategies to remain competitive in international markets.



EXHIBIT 3

The 3D framework provides a real-time view of global policies affecting sectors and products



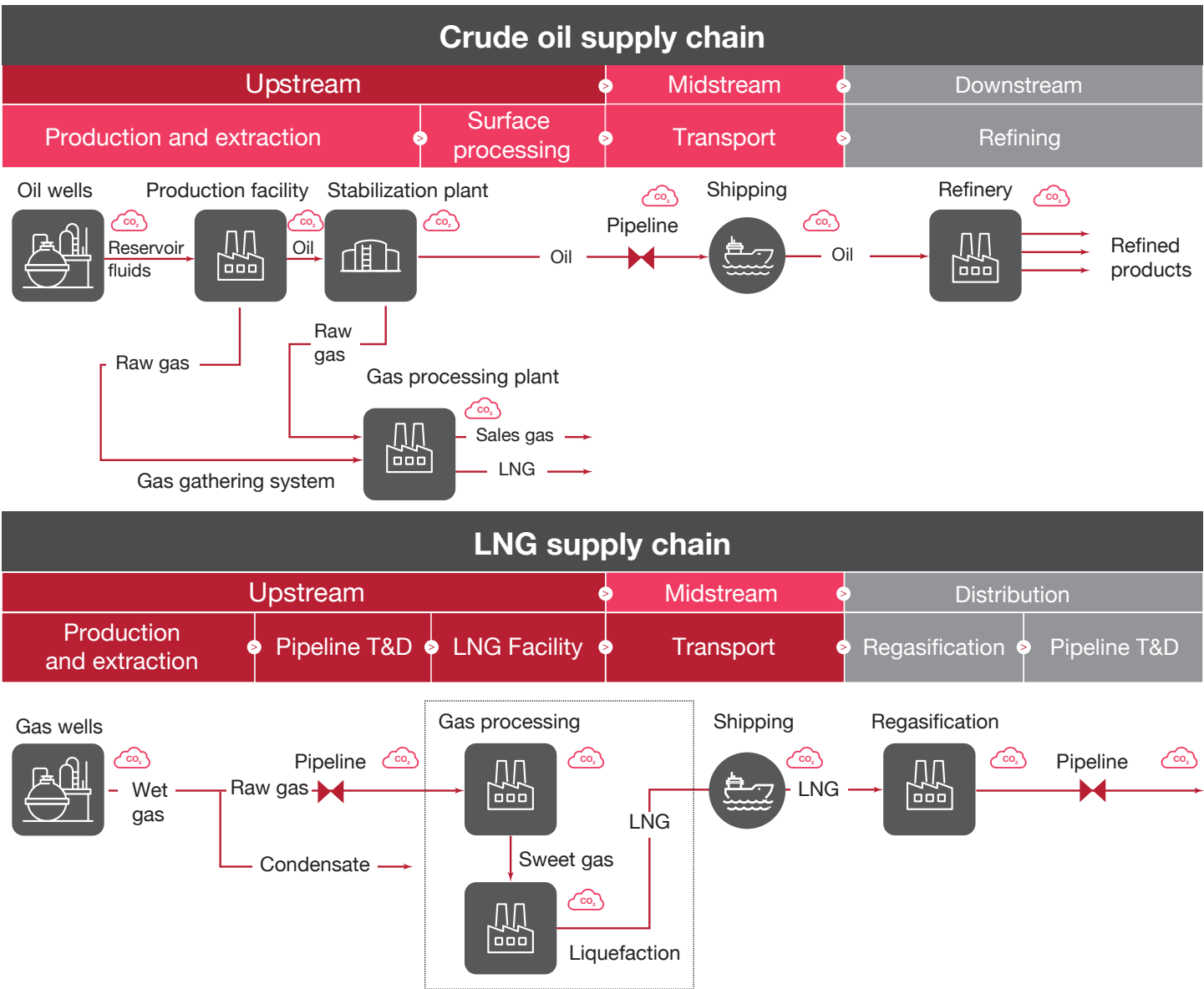
Policies	
E.U. Emissions Trading Scheme (ETS)	IMO Greenhouse Gas Emissions Reduction Strategy (GHG)
E.U. Carbon Border Adjustment Mechanism (CBAM)	E.U. Carbon Border Adjustment Mechanism (CBAM)
U.S. Foreign Pollution Fee Act (FPFA)	U.S. Foreign Pollution Fee Act (FPFA)
ICAO Carbon Offsetting and Reduction Scheme (CORSIA)	E.U. Fuel Quality Directive (FQD)

Note: ICAO=International Civil Aviation Organization, IMO=International Maritime Organization, LNG=liquefied natural gas.
Source: Strategy& analysis

Carbon accounting as a source of competitive advantage

The oil and gas industry plays a part in almost every major industrial supply chain (see Exhibit 4). The industry directly provides fuel for elements as varied as power, transport, steel, and cement; and feedstock for products including petrochemicals and plastics. Thus, decarbonizing oil and gas production has a material knock-on effect in reducing embedded carbon emissions across a great many downstream sectors: It benefits all downstream users of the molecules and supports the transition to cleaner, lower-carbon alternatives in the future.

EXHIBIT 4
Oil and gas are core elements of supply chains across sectors



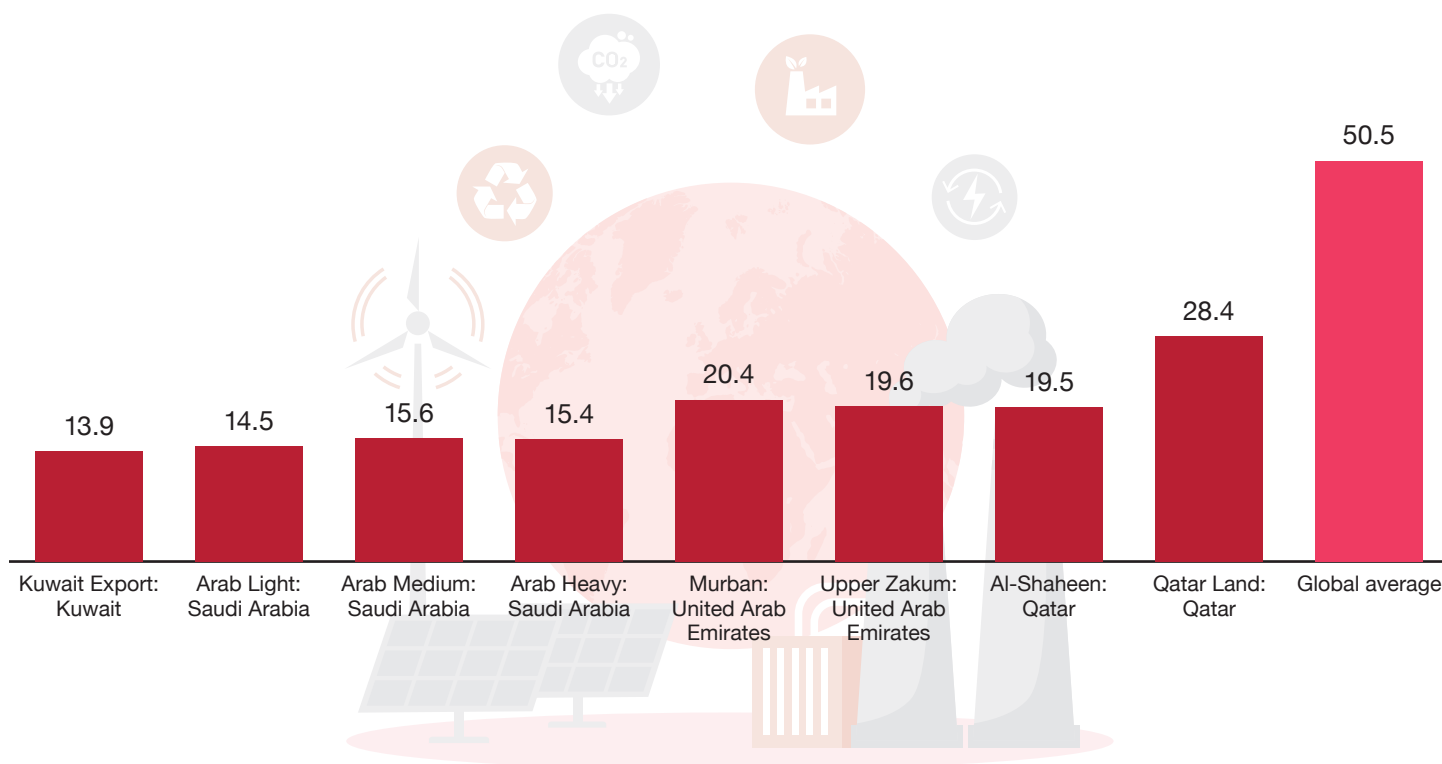
Note: LNG=liquefied natural gas, T&D=transmission and distribution.
Source: Strategy& analysis

For GCC energy companies, the industry's role presents an opportunity and a challenge: With their large-scale export-oriented production operations, their energy products are typically less carbon-intensive than those of global peers (see *Exhibit 5*).

EXHIBIT 5

GCC energy products are less carbon-intensive than the global average

(Selected examples of regional crudes, kg CO₂ equivalent/barrel)



Note: GCC main crudes carbon intensity versus the global average (kilogram CO₂ equivalent per barrel of oil at the refinery entrance). Carbon intensity calculated from the well to refinery entrance gate.

Source: Strategy& analysis; Dixit, Y., El-Houjeiri, H., Monfort, J.C., et al. Carbon intensity of global crude oil trading and market policy implications. *Nature Communications* 14, 5975 (2023). <https://doi.org/10.1038/s41467-023-41701-z>

Shifting to product-level carbon accounting offers GCC energy players several strategic advantages:

- **Market responsiveness:** Enables emissions reductions tailored to meet each market's standards
- **Policy compliance:** Improves compliance by aligning emissions reporting with policies in key markets
- **Competitive advantage:** Differentiates products through carbon transparency, building customer trust and strengthening brand reputation
- **Long-term resilience:** Establishes a flexible foundation to support resilience amid policy and market shifts

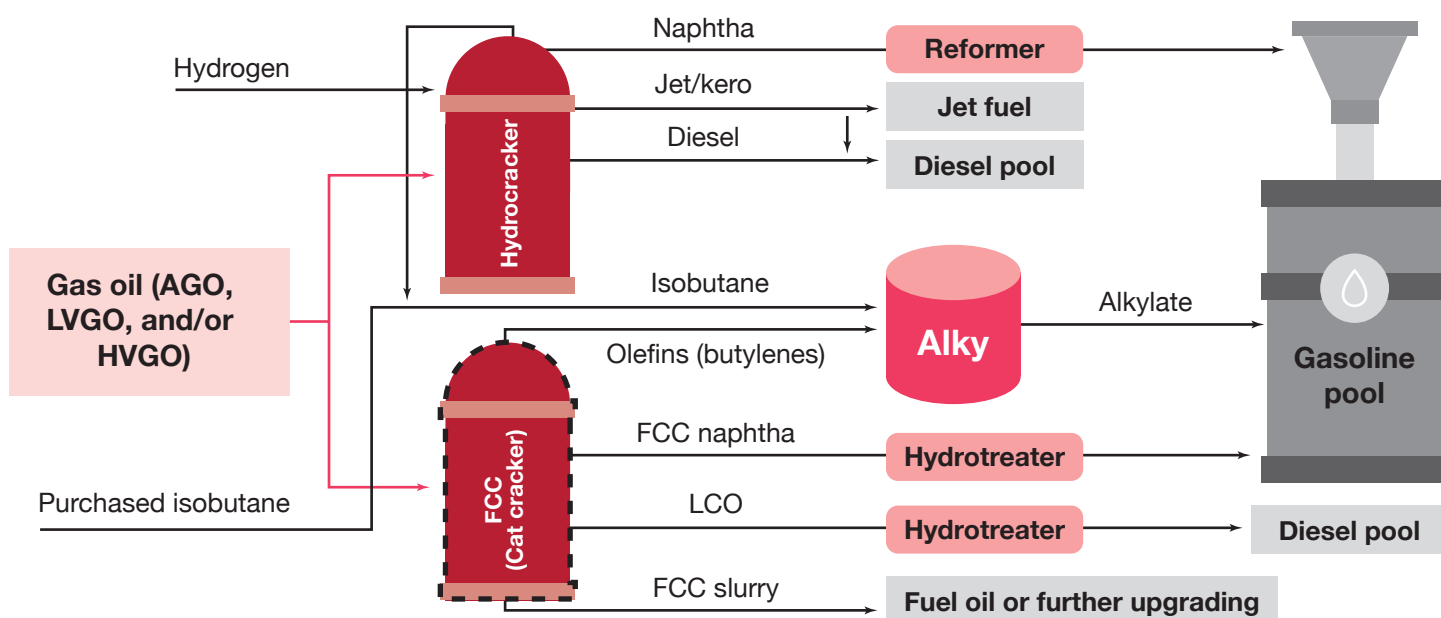
THE CHALLENGES OF PRODUCT-LEVEL CARBON ACCOUNTING

Implementing a product-level carbon accounting strategy is challenging. Many GCC energy players have yet to fully codify and deploy carbon accounting policies at the corporate level, let alone at the level of individual products. Several GCC countries are still developing their regulatory and legislative agendas for carbon emissions, which provide the foundation to guide participants in developing their carbon accounting policies. Such frameworks allow companies to move ahead despite the rapidly changing nature of this field. Participants cannot afford to wait for everything to become clear before acting.

Companies need robust methodologies and significant data management to accurately allocate emissions from shared facilities in oil and gas, particularly in complex operations. Addressing Scope 3 emissions involves particular complexity, as it demands extensive collaboration across supply chains to quantify and then reduce indirect emissions. Consider the example of the gasoline value chain, which demonstrates the complexities of switching to product-level carbon accounting (see *Exhibit 6*).

EXHIBIT 6

The value chain for gasoline illustrates the complexities of product-level carbon accounting



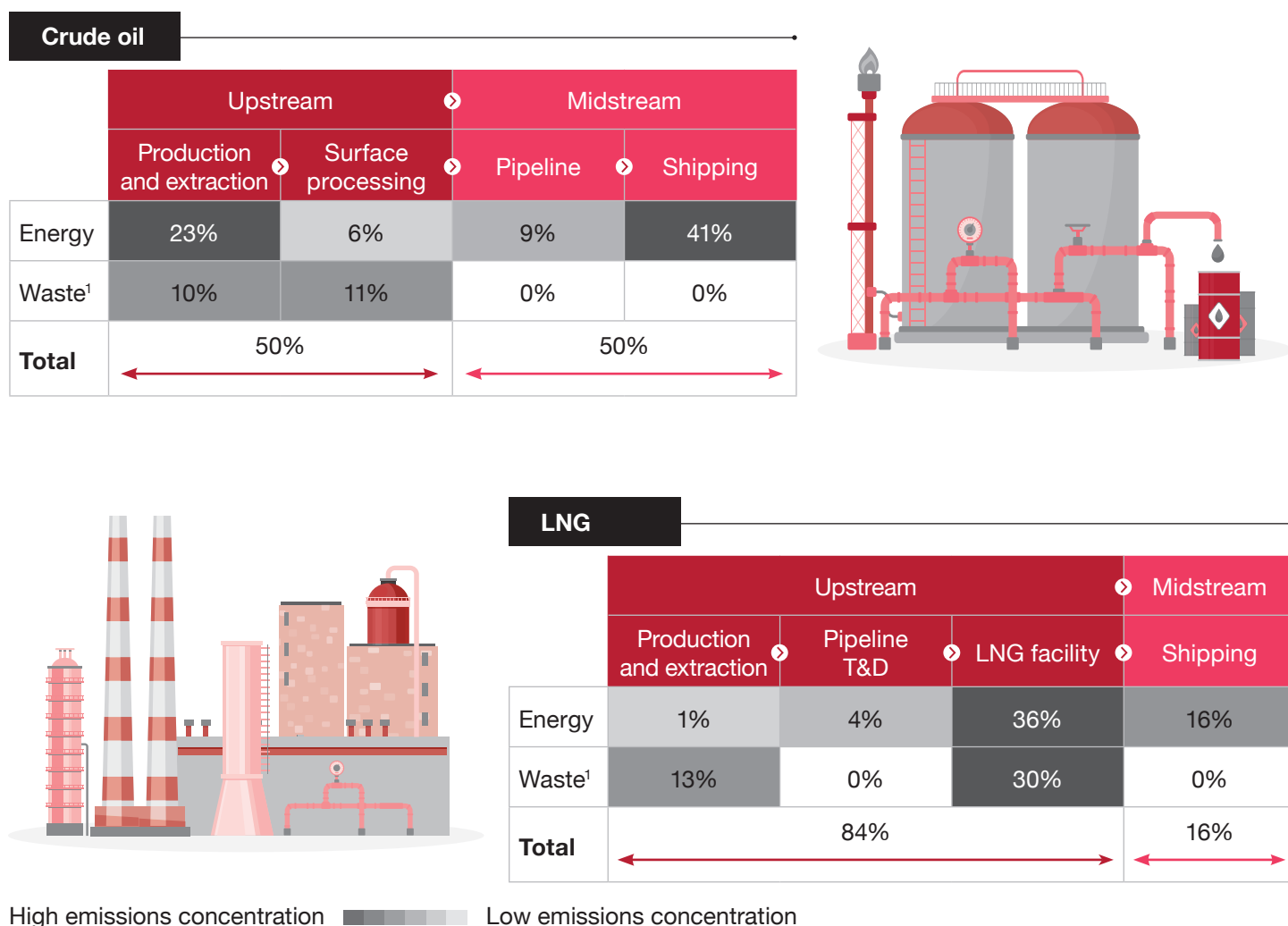
Note: AGO=automotive gas oil, FCC=fluid catalytic cracking, HVGO=heavy vacuum gas oil, LCO=light cycle oil, LVGO=light vacuum gas oil.
Source: Strategy& analysis

Furthermore, any given product has a unique decarbonization pathway. The carbon profile and decarbonization pathway for a typical barrel of GCC crude is different from the equivalent in liquefied natural gas (LNG) (see Exhibits 7 and 8). Crude and LNG are simple upstream products, yet the complexity of their decarbonization pathways is significant. Doing the same exercise for downstream products that might share processing streams or have different feedstocks or precursors would be even more complex.

EXHIBIT 7

Comparing the carbon profiles of GCC crude oil and LNG

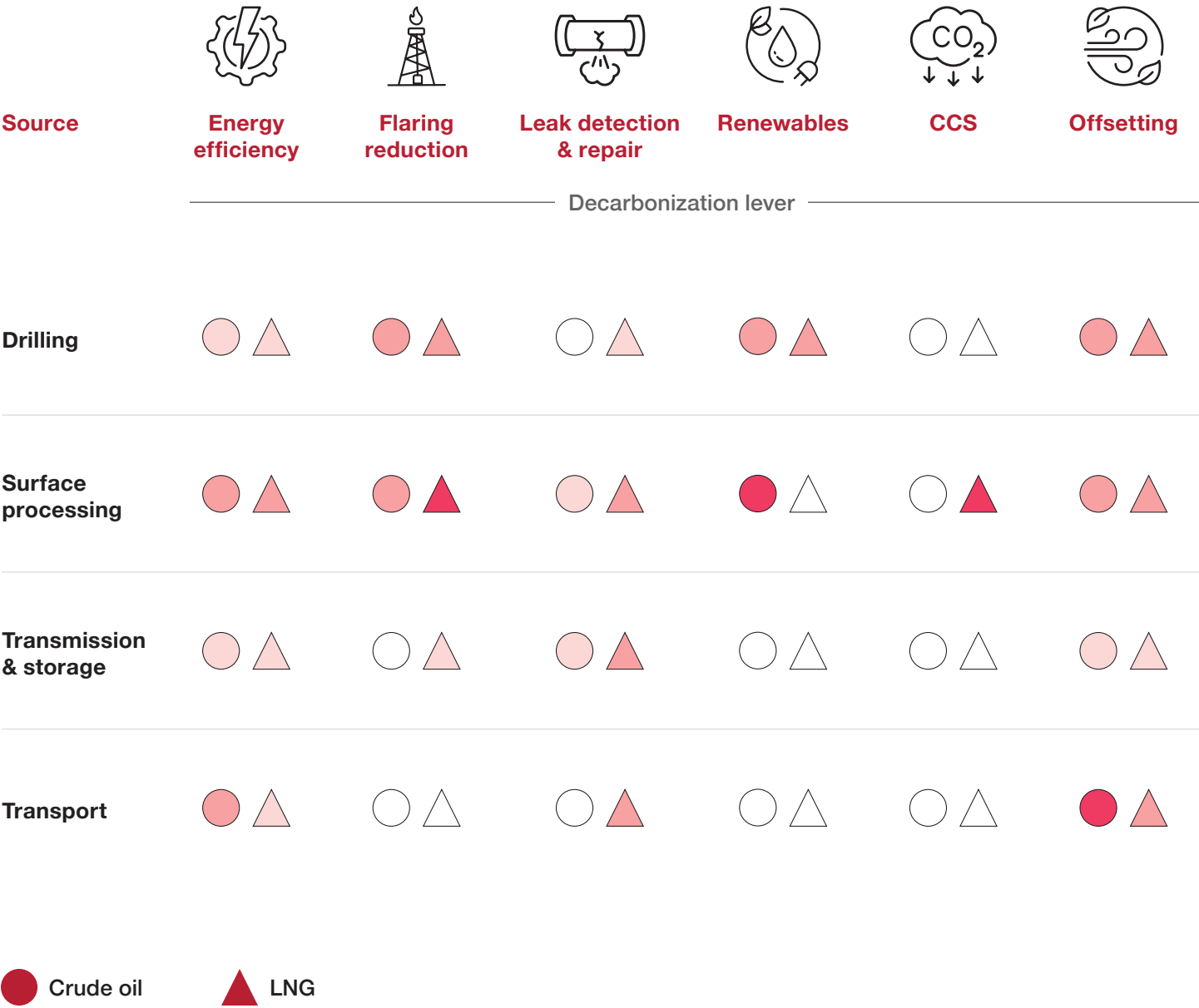
(Carbon profiles of GCC crude oil and LNG, % of total carbon emissions)



¹ Waste include emissions from gas flaring, venting, and fugitives.

Note: LNG=liquefied natural gas, T&D=transmission and distribution.
Source: Strategy& analysis

EXHIBIT 8
Comparing the decarbonization pathways of GCC crude oil and LNG



Level of effectiveness
Low  High

Note: CCS=carbon capture and storage, LNG=liquefied natural gas.
Source: Strategy& analysis

The different relative sources and causes of carbon emissions for these products imply that the methods a company can use to decarbonize them will also be different. For example, the emissions from oil extraction—which accounts for around 23 percent of the carbon emissions of the crude value chain—can largely be abated by fully electrifying gas injection compressors and switching power from burning gas in a captive generator to taking electricity directly from the grid. This process could benefit from using renewable energy, which by its nature has a low carbon footprint. By contrast, most LNG liquefaction units—accounting for around 36 percent of total LNG value chain emissions—cannot be electrified in the same way. Carbon capture and storage is relatively easily applied to the large point sources of carbon emissions of a gas processing plant in the LNG value chain but is very difficult to apply to the widely distributed emissions sources in upstream crude production.

How to take action

Overcoming these challenges requires a dedicated and conscious effort from GCC energy players along four dimensions:

1. Developing, codifying, and then deploying a comprehensive product-level carbon accounting framework that attracts recognition and that complies with the latest global and national policies and regulations
2. Investing in systems for automation and data management that enable the efficient measurement, reporting, and verification of carbon emissions data
3. Creating capabilities and decision rights that prioritize decarbonization efforts to maximize impact on key products going to major markets with leading carbon policies
4. Investing in capabilities to continuously monitor national and international carbon regulatory and legislative developments, especially in key customer markets, and adapting corporate policies and strategies accordingly

CONCLUSION

In a shifting policy and market landscape, GCC energy companies must go beyond traditional, broad decarbonization efforts to achieve lasting impact. A product-level approach aligned with market and policy requirements offers adaptability, compliance, and a competitive edge essential for success. Such a product-level approach to carbon accounting enables GCC companies not only to meet the latest regulatory requirements but also to get ahead of peers in increasingly carbon-regulated markets. By adopting this strategy, GCC companies will be well-positioned to confront future challenges, fostering both resilience and growth in a carbon-conscious world.

ENDNOTES

1. The GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.
2. Scope 1 emissions come directly from an organization's emissions. Scope 2 emissions come indirectly from energy consumption, such as electricity from the grid. Scope 3 emissions come indirectly from activities along the value chain that the organization neither owns nor directly controls.
3. Carbon Border Adjustment Mechanism, E.U. Commission, January 8, 2025 (https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en).
4. Carbon Offsetting and Reduction Scheme for International Aviation, June 2024 (<https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx>).
5. Foreign Pollution Fee Act of Congress, 2023 (<https://www.congress.gov/bill/118th-congress/senate-bill/3198/text>); IMO Strategy on Reduction of GHG Emissions from Ships, 2023 (<https://www.imo.org/en/MediaCentre/HotTopics/Pages/Cutting-GHG-emissions.aspx>).



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