The Next Era of Oil and Gas Innovation

Chris Robinson
Senior Director

Innovation tailwinds have shifted to headwinds

Pressure from leadership to focus on near-term profitability

Wavering regulatory support and government funding

Faltering market for startups due to fewer exit strategies for startups

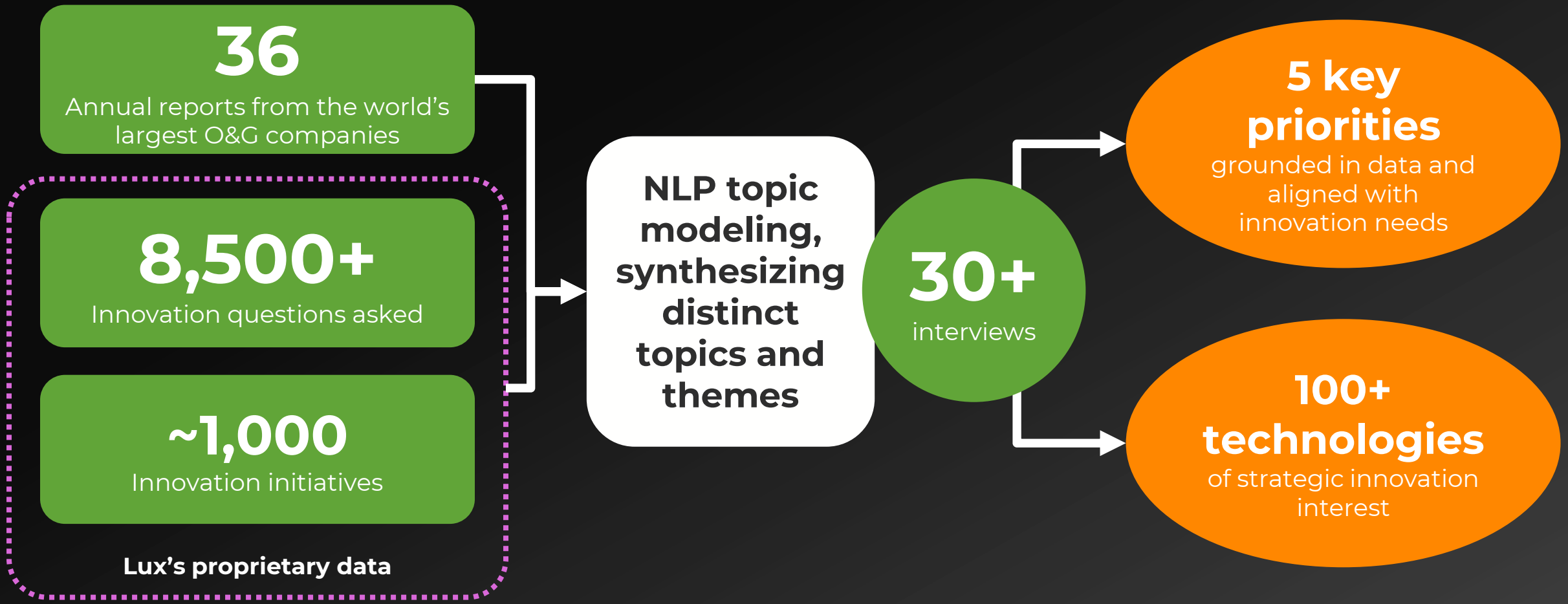
Agenda

01 **Identifying Oil and Gas Innovation Priorities**

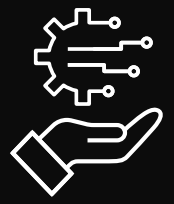
02 Analyzing Trends within Priorities

03 Capitalizing on the Next Era of Oil and Gas Innovation

Unbiased, Customer-Centric



Lux for Oil and Gas Innovation Leaders



Harnessing External Innovations

Moving Beyond the Core

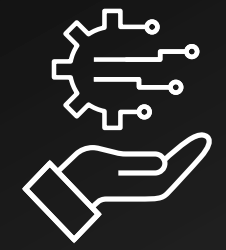
Meeting Net-Zero Targets

Future Chemicals

Meeting Demand for Energy

Policy and Regulations

Harnessing External Innovation



Leverage advances in materials science, AI, and other novel technologies.

Understanding how to deploy AI in operations today, as well as how they can accelerate timelines for introducing future innovations, dominate this theme.

Novel materials, sensors and robotics also rose to the top of our topical analysis of annual reports, used to improve efficiency or extend the life of assets.

> *Which innovators are developing new and enhanced functionalities in **industrial robotics** through the integration of **advanced sensors**?*

> *How should an oil and gas company leverage **quantum computing**, and who are the most promising partners?*

Moving Beyond the Core

Identify opportunities to make new products or expand into new markets.

Many companies today are revisiting tactics for exploring opportunities beyond the core, prioritizing those with near-term revenue opportunities.

Monitor rising electricity prices, which impact direct opportunities in electrification as well as impact timelines for those requiring electricity, like e-fuels.

> *Which industries are showing the greatest demand for **carbon capture** solutions?*

> *Can **battery swapping** viably compete with **fast-charging** for electric vehicles?*

Meeting Net-Zero Targets

Understand which technologies are needed to meet interim and long-term decarbonization goals.

Many companies are pressing up against their first interim GHG reduction targets as many work toward net-zero targets for 2050, and require novel technologies to lower emissions from existing operations.

These plans need to be flexible, adapting to changes in technology costs and maturity.

> *Which technologies are suitable for deploying today in **low-carbon heat**?*

> *How should my organization build a strategy around carbon offsets? How scalable and reliable are carbon offset technologies?*

Future Chemicals

Keep abreast of innovations in novel feedstocks, production processes, uses, and recycling of chemicals.

Like most industries, chemicals companies face pressure to decarbonize and defossilize, creating changes in what feedstocks they require and a need for solutions to decarbonize.

An understand of which pathways will be used for which molecules is critical to supporting or even expanding into these markets.

> *Which molecules are most promising to produce via electricity?*

> *Who are leaders among innovators in **biobased chemicals**?*

Meeting Demand for Energy

Gain foresight into future demand for energy and which carriers they'll require.

Data centers have dominated conversations about energy consumption, further straining power grids already coping with rapidly rising increases in demand.

Rising demand and costs for electricity is already impacting other product mixes, slowing progress in e-fuels and threatening to slow adoption of electric vehicles.

> *Are the hype and concerns over **data center** growth real, and how should an oil and gas company take advantage of the opportunity?*

> *Will advancements in **geothermal** and **nuclear power** threaten natural gas demand?*

Policy and Regulations

Get pragmatic advice on how to guide innovation strategies based on regional policy changes

Today's tumultuous regulatory environment creates uncertainty, forcing businesses to consider a variety of potential future policy scenarios.

Innovation teams require insight into which regions are supporting which technologies, as they often hold the keys to understanding where and when new technologies can be launched and adopted.

> *Which emerging technologies face the biggest supply chain risks, and what novel **critical mineral extraction** opportunities are there?*

> *How do **carbon offsets** generated from DAC compare to other credits on metrics like price and risk?*

Agenda

01 | Identifying Oil and Gas Innovation Priorities

02 | **Analyzing Trends within Priorities**

03 | Capitalizing on the Next Era of Oil and Gas Innovation

Lux for Oil and Gas Innovation Leaders

88%
↑10%

Harnessing External Innovations

88%
↓12%

Moving Beyond the Core

100%
0%

Meeting Net-Zero Targets

34%
↑23%

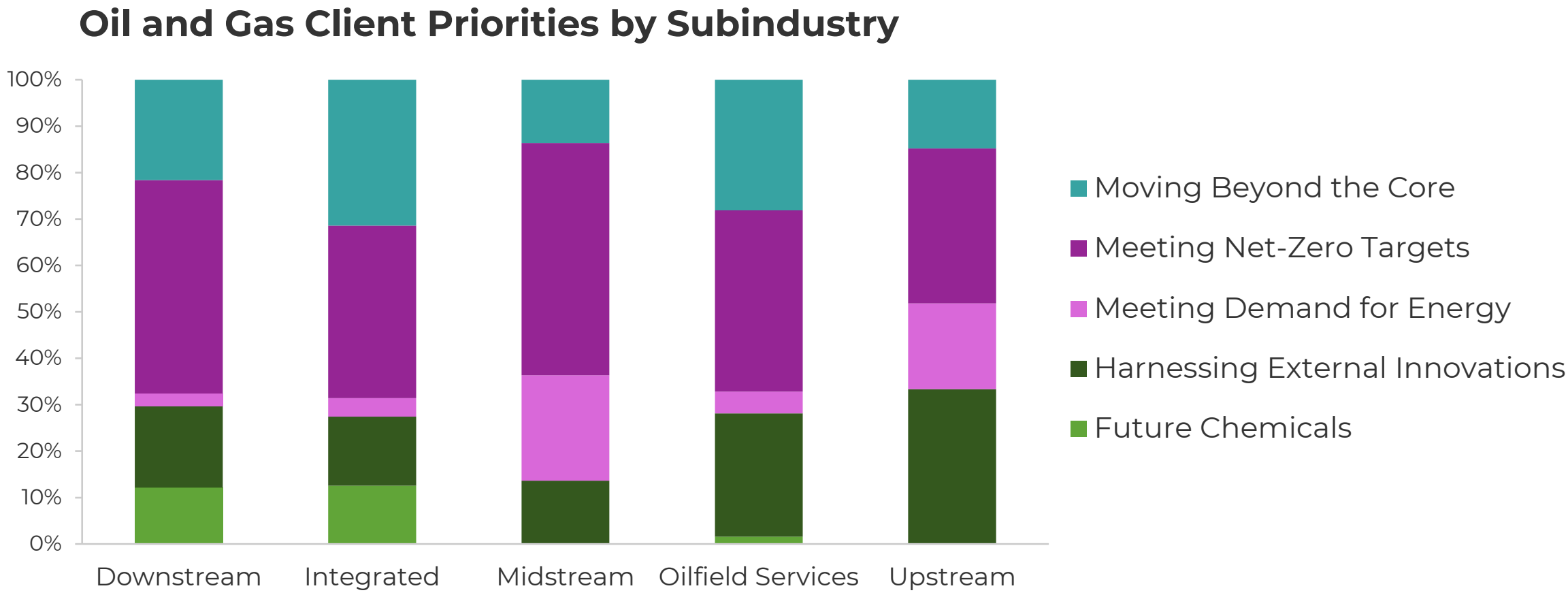
Future Chemicals

47%
↑5%

Meeting Demand for Energy

Policy and Regulations

Priorities by Subindustry



Priorities by Subindustry

Oil and Gas Client Priorities by Subindustry

Meeting Net-Zero Targets

PHILLIPS 66

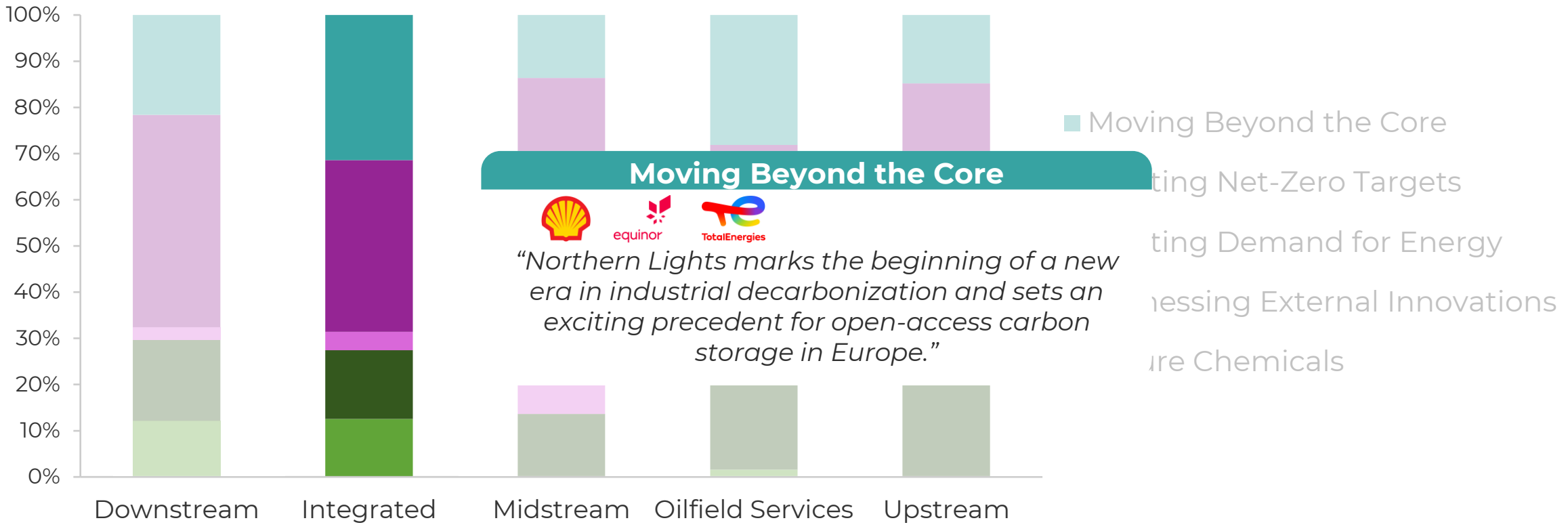
NEXTera ENERGY

"We saw an opportunity to reduce our carbon footprint, save on utility costs, while at the same time producing reliable, affordable energy."

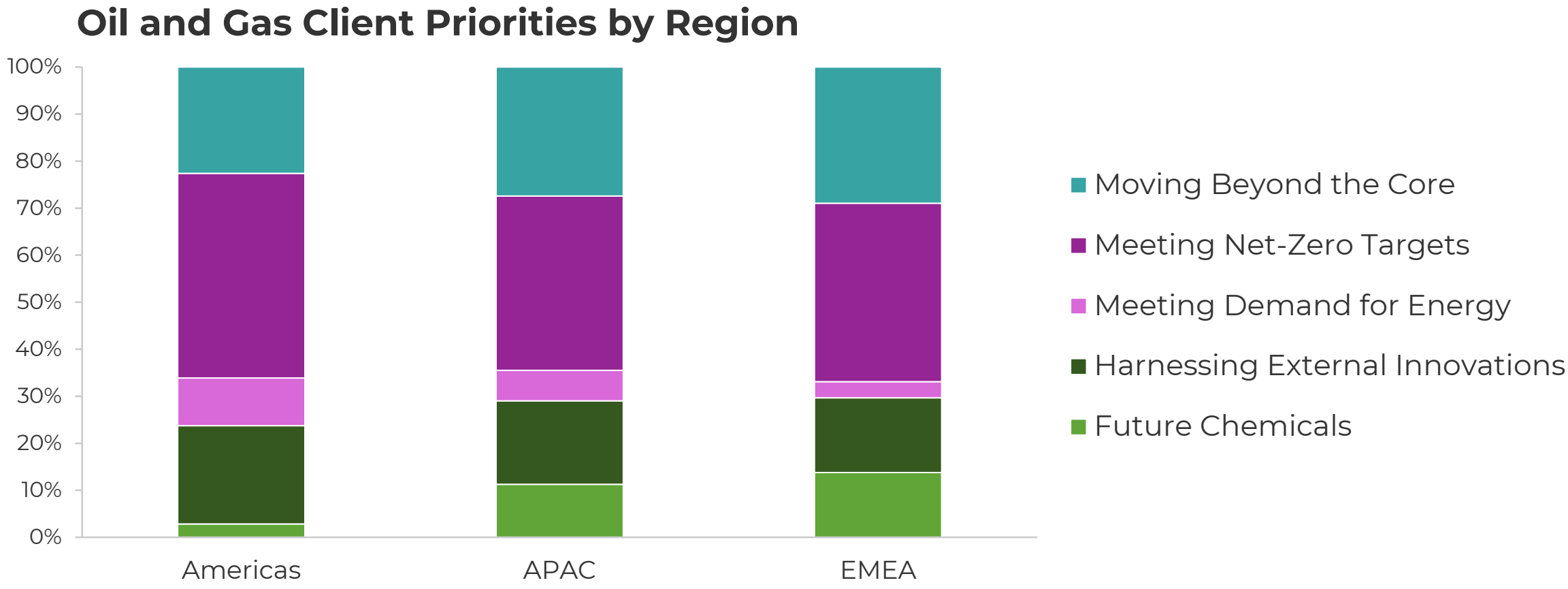
- Moving Beyond the Core
- Meeting Net-Zero Targets
- Meeting Demand for Energy
- Harnessing External Innovations
- Future Chemicals

Priorities by Subindustry

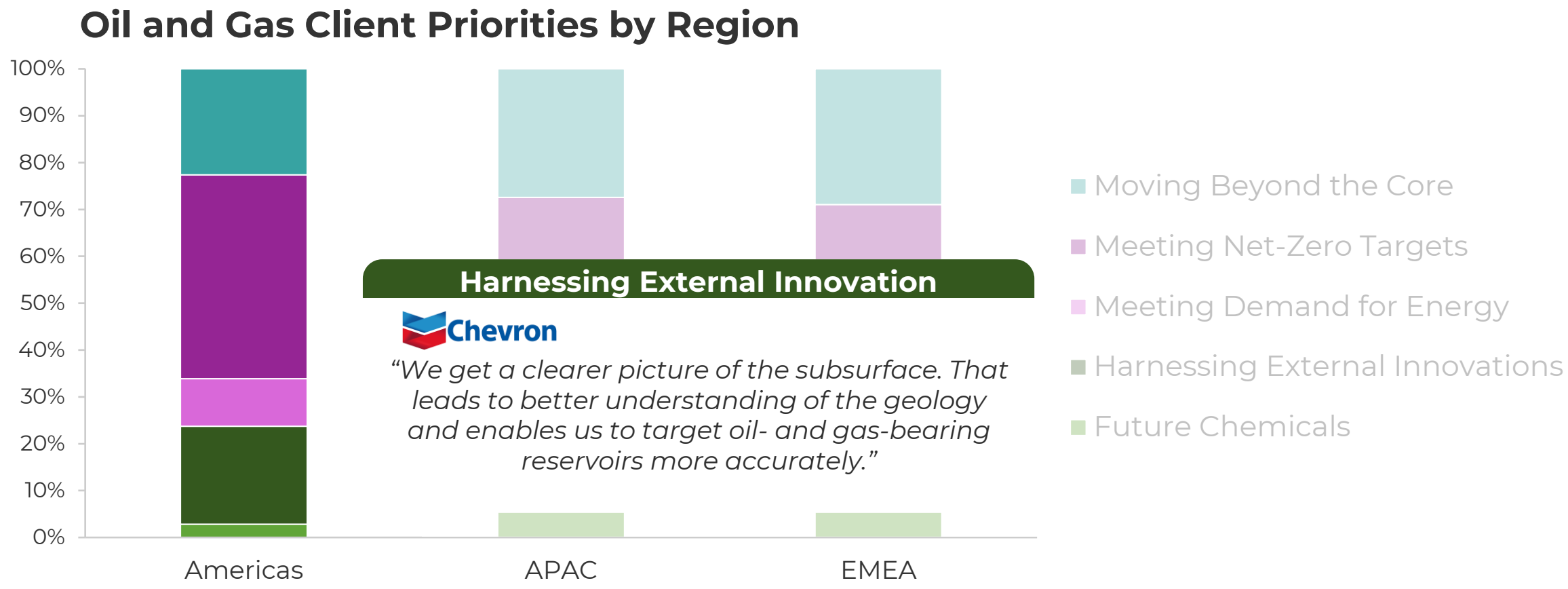
Oil and Gas Client Priorities by Subindustry



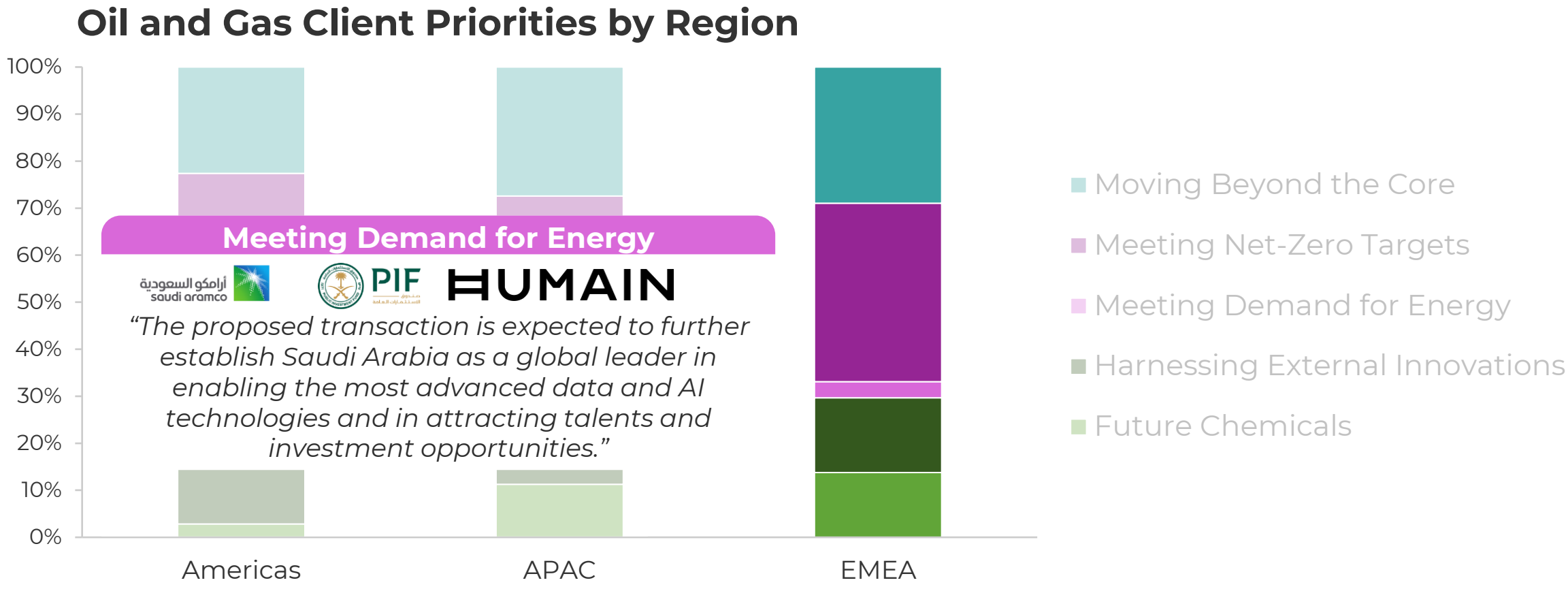
Priorities by Region



Priorities by Region



Priorities by Region



Agenda

01 | Identifying Oil and Gas Innovation Priorities

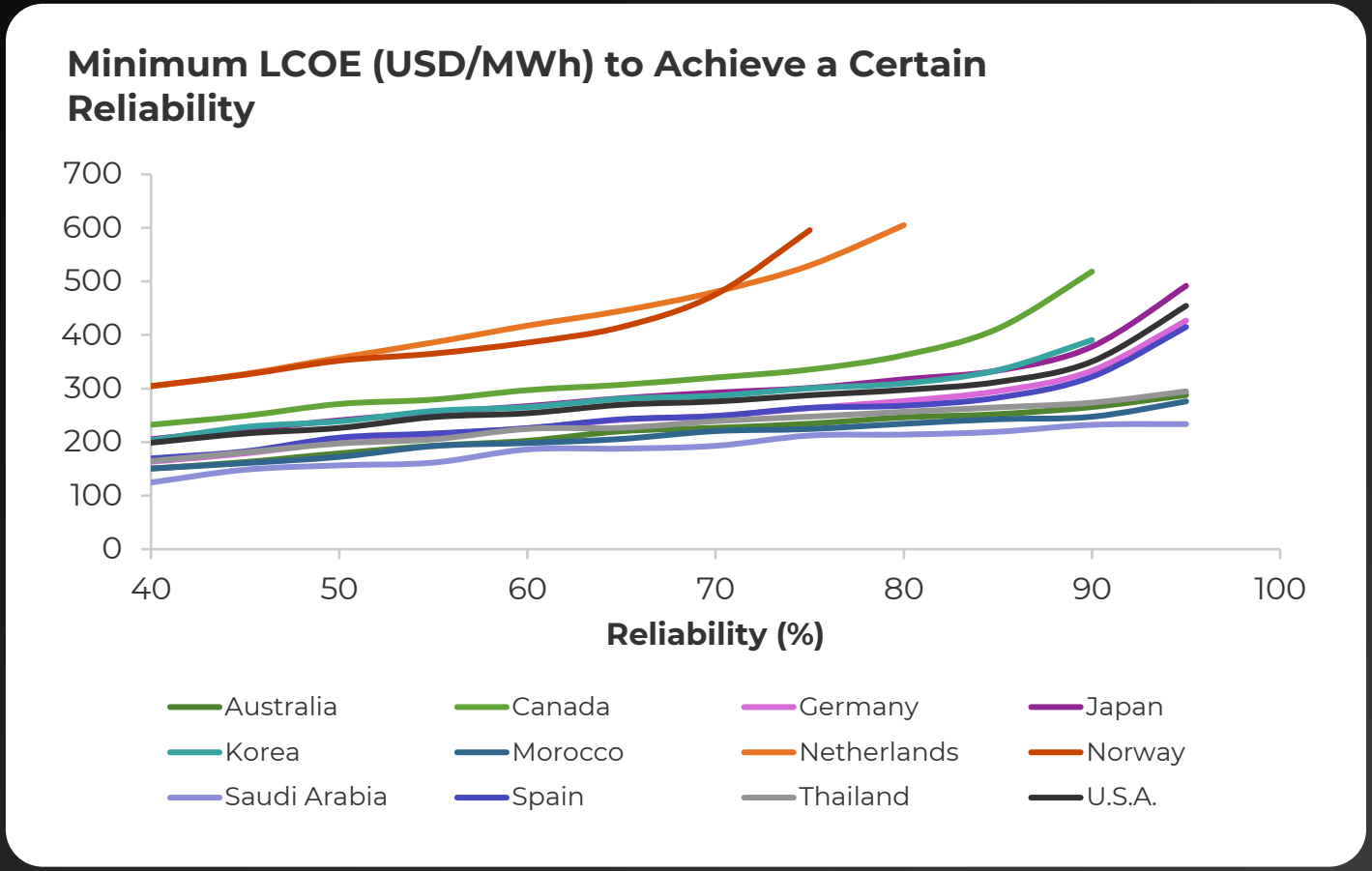
02 | Analyzing Trends within Priorities

03 | **Capitalizing on the Next Era of Oil and Gas Innovation**

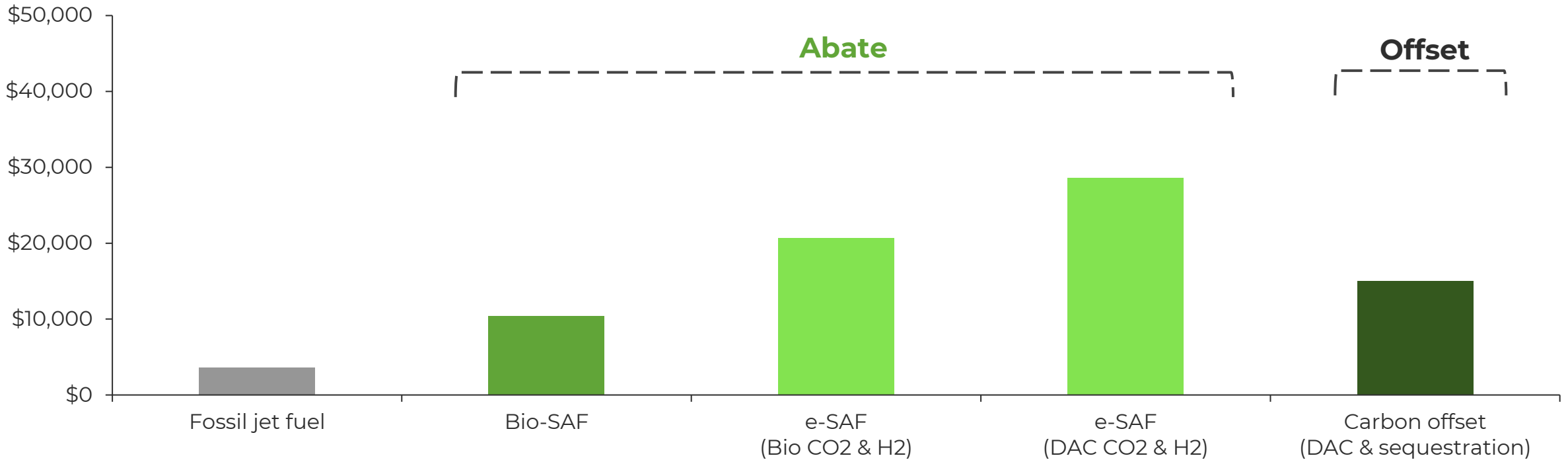
Electricity costs will rise, but keep an eye out for falling Li-ion prices

A combination of increasing load growth and the integration of intermittent and variable renewable power is stressing power grids.

With raw material prices low and Li-ion battery pack prices falling below USD 100/kWh, grid storage is expected to grow rapidly.



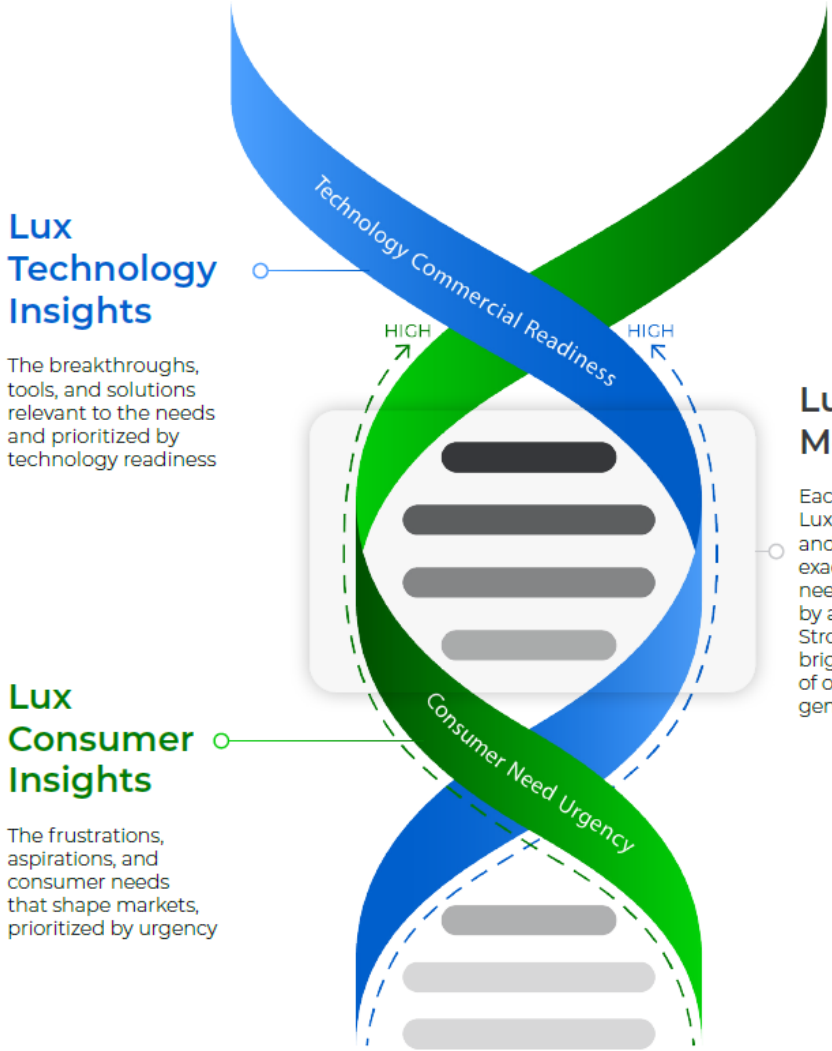
SAF remains costlier than fossil jet fuel; incentives needed to bridge gap



Don’t overlook consumer sentiment

The major themes we were asked about in 2025 — data centers, CCUS, and grid storage — all have had projects canceled due to consumer pushback.

Keep a close eye on consumer innovation using Lux’s Innovation Helix.



Key Takeaways

1

There are many headwinds to innovation.

Financial constraints, not regulations or a lack of innovation technologies, are the biggest challenge innovation teams face today.

2

Companies are targeting near-term impacts to the core.

However, some companies are overdivesting innovation efforts, and risk future positioning.

3

Rising electricity prices will shape energy projects.

Only regions with grids that can supply low-carbon and low-cost power will compete in e-fuels and e-chemicals; watch for China to make major advancements.

Thank You

VISIT
www.luxresearchinc.com

FOLLOW
@LuxResearch

CONNECT
LuxResearch

READ
http://www.luxresearchinc.com/blog/

EMAIL
questions@luxresearchinc.com

About Lux

Lux Research fuels innovators to not only imagine what's possible in the future but also operationalize innovation success in the near term. We deliver research and advisory services to inspire, illuminate, and ignite innovative thinking that reshapes and grows businesses. Using quality data derived from primary research, fact-based analysis, and opinions that challenge traditional thinking, our experts focus on finding truly disruptive innovations that are also realistic and make good business sense.

The "Lux Take" is trusted by innovation leaders around the world, many of whom seek our advice directly before placing a bet on a startup or partner — our clients rely on Lux insights to make decisions that generate fantastic business outcomes. We pride ourselves on taking a rigorous, scientific approach to avoid the hype and generate unique perspectives and insights that innovation leaders can't live without.

VISIT

www.luxresearchinc.com

FOLLOW

@LuxResearch

CONNECT

LuxResearch

READ

http://www.luxresearchinc.com/blog/

EMAIL

questions@luxresearchinc.com