



# The Next Era of Industrials Innovation

2025 Update

## Clear investment themes

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## Healthy financials & strong backlogs

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## Macroeconomic uncertainties

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# The industrials sector has experienced this before

The **early 2000s** was a period of strong economic growth driven by globalization and a commodity boom.

Then, the **global financial crisis** happened.

Many that **accelerated innovation** during the upcycle reaped the benefits during the recovery.

## ABB emerges stronger from 2010 as growth accelerates on industrial demand

Press release | Tokyo, Japan | 2011-02-17

 Press Release 26 January 2010 Siemens AG Munich, Germany



SIEMENS

Siemens' profit from operations up substantially in first quarter despite declining revenue



Harvard  
Business  
School

OCTOBER 2014 CASE HBS CASE COLLECTION

## Honeywell and the Great Recession (A)

By: [Sandra J. Sucher](#) and Susan J. Winterberg

Format: Print | Language: English | Pages: 22

“ ”

Bringing together Boyd Thermal...with Eaton's existing products and scale will provide enhanced value to customers.

Paulo Ruiz  
Eaton, CEO





“ ”

The acquisition of Eco Material Technologies positions CRH at the forefront of the transition to next-generation cement and concrete.

Jim Mintern  
CRH, CEO



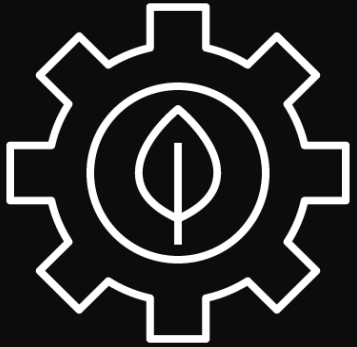


**Innovation is the catalyst that turns  
momentum into transformation.**

# Agenda

- 01 | Shifting innovation priorities
- 02 | Technologies of strategic interest
- 03 | Navigating innovation-driven transformation

# Industrials Innovation Priorities



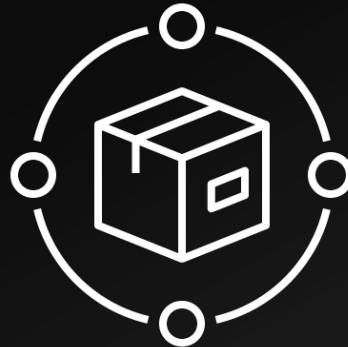
## Decarbonizing Operations

Propel operations toward zero-emissions and zero-waste with innovative technologies and processes.



## Resource Security and Circularity

Ensure access to critical minerals, raw materials, and water through innovative and circular technologies and processes.



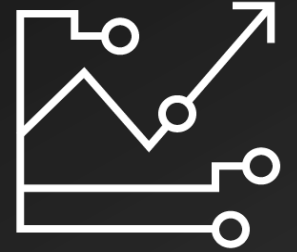
## Next-Gen Materials and Manufacturing

Integrate cutting-edge materials and processes to enhance functionality, performance, and reliability.



## Enabling the Energy Transition

Empower and lead the energy transition by delivering essential solutions and technical expertise for future energy systems.

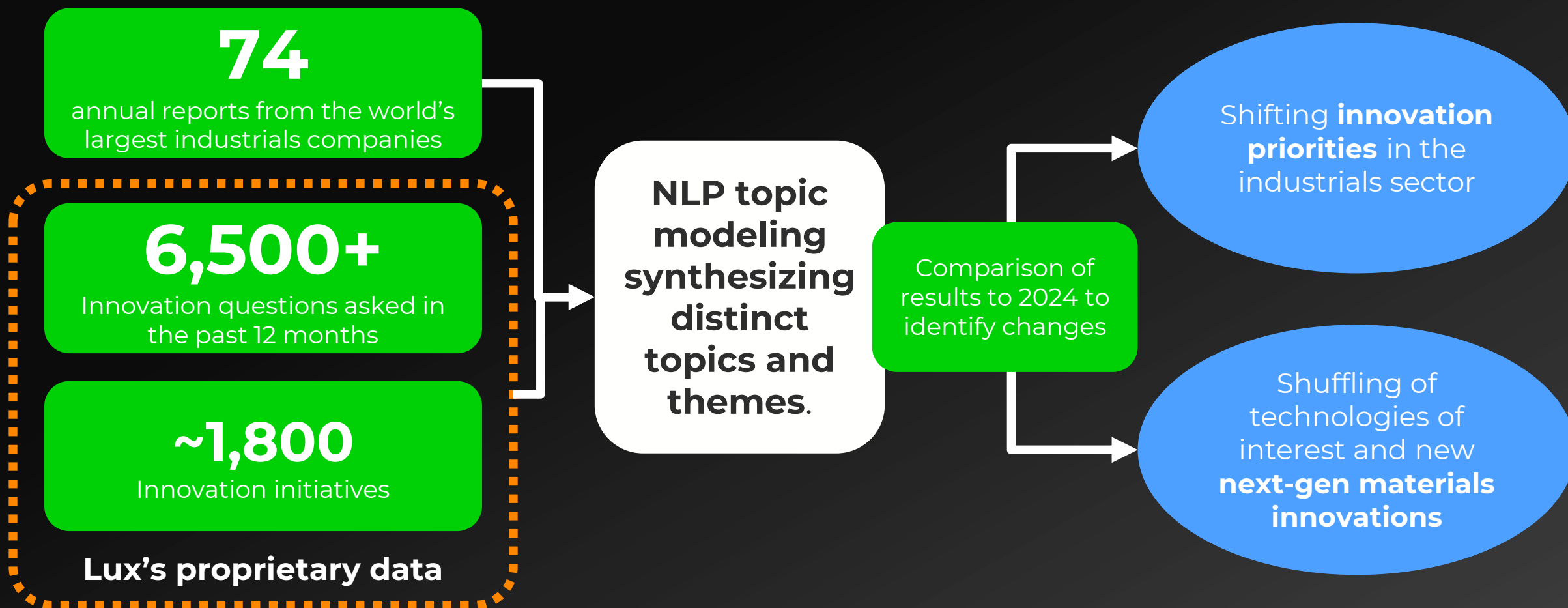


## Retooling for New Market Opportunities

Leverage core expertise to develop disruptive technologies that will grow existing markets and expand into adjacencies.



# Looking back at the last 12 months



# 2024: Year of decarbonization



## Decarbonizing Operations

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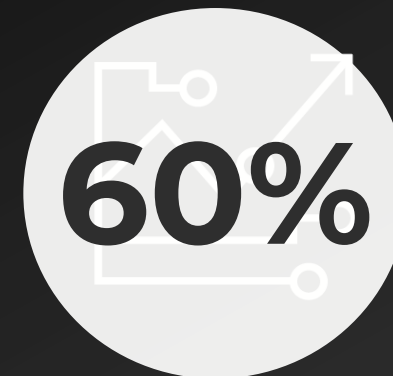
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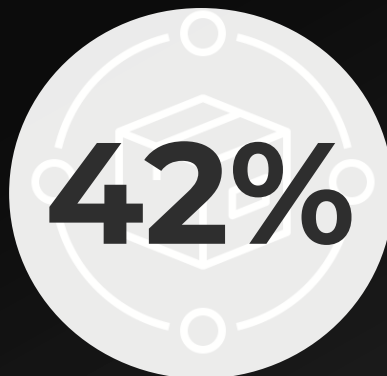
# 2025: Looking to the cutting edge



Decarbonizing  
Operations



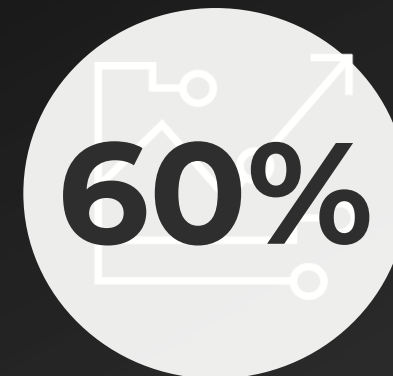
Resource Security  
and Circularity



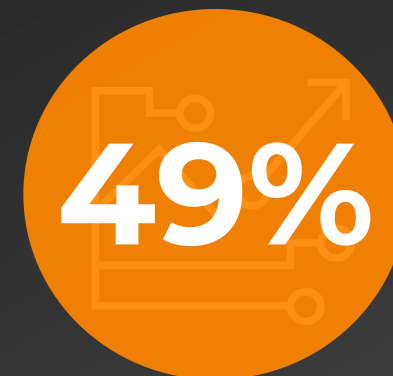
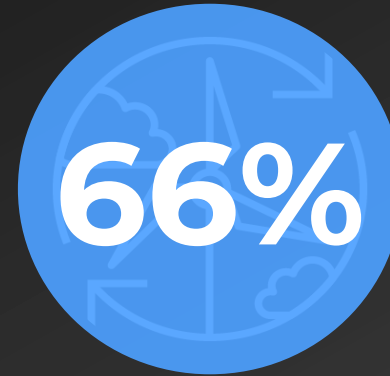
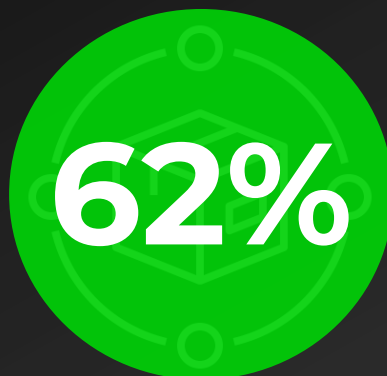
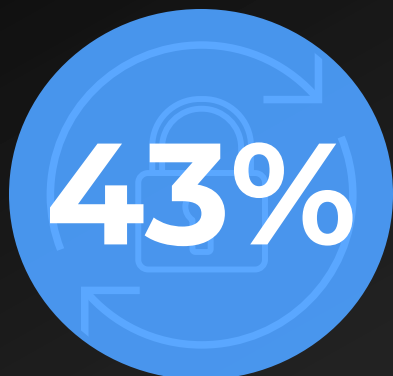
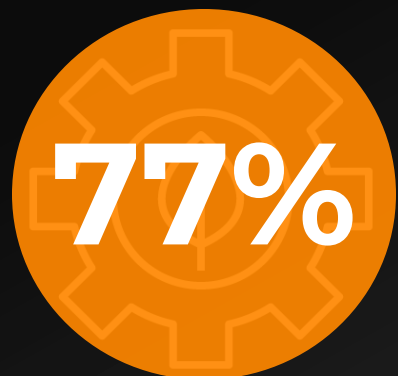
Next-Gen Materials  
and Manufacturing



Enabling the  
Energy Transition

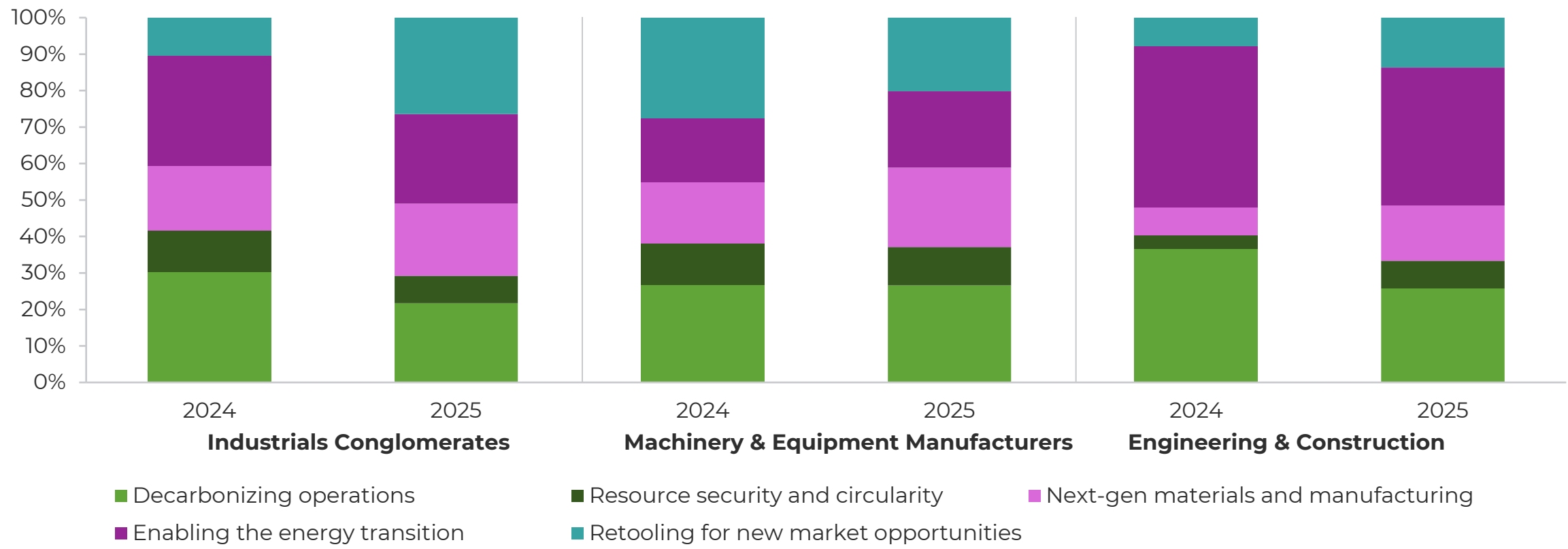


Retooling for New  
Market  
Opportunities

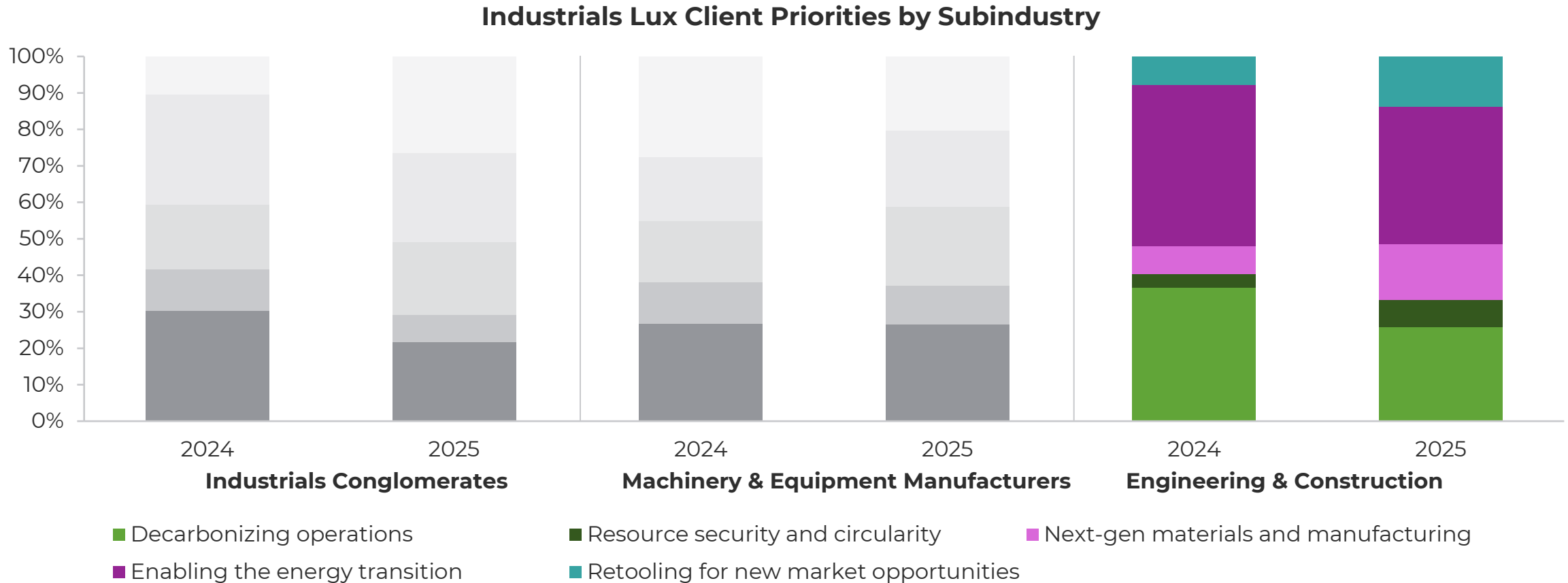


# Distinct priorities across subindustries

Industrials Lux Client Priorities by Subindustry

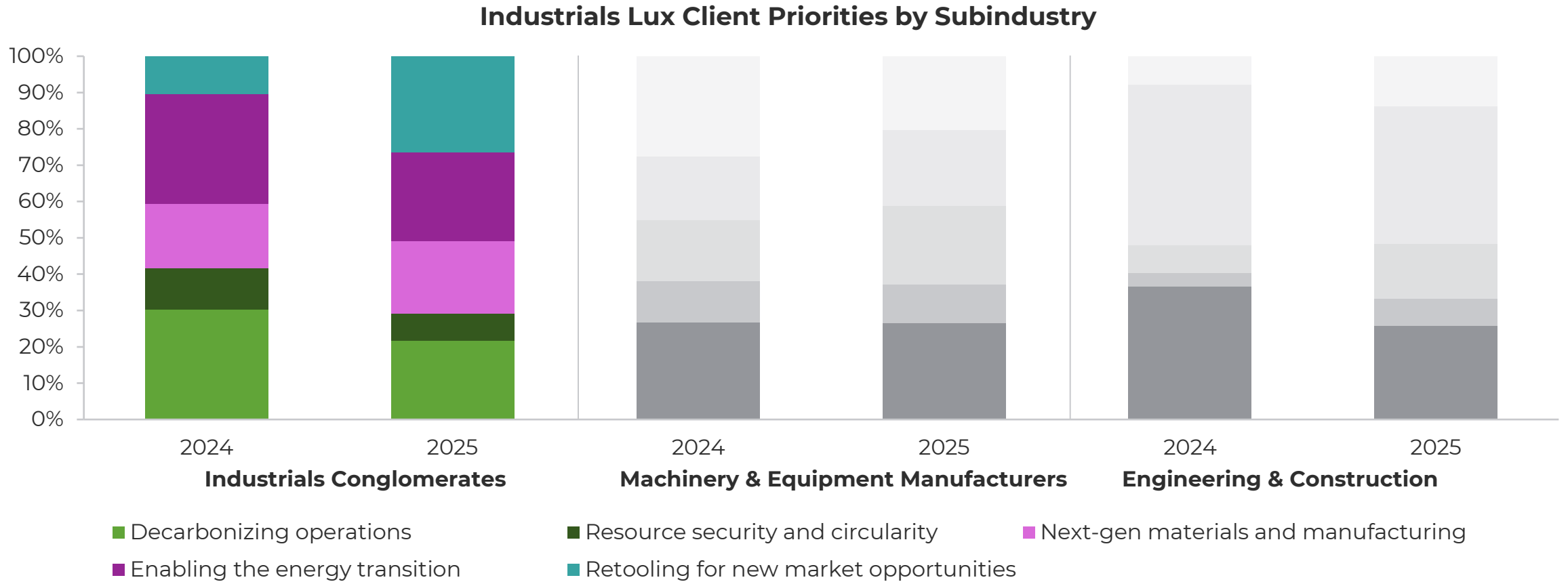


# Enabling the energy transition remains core to EPC innovation strategy

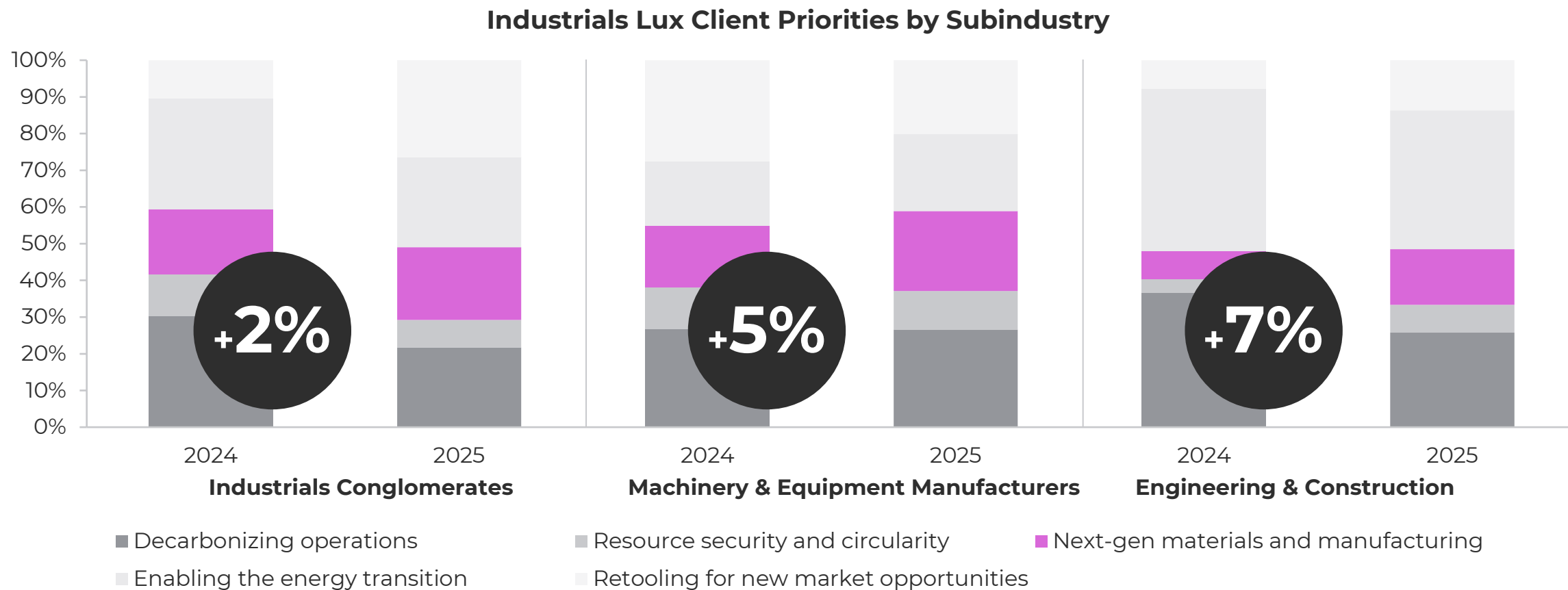




# Industrial conglomerates expand focus on tapping into adjacent markets

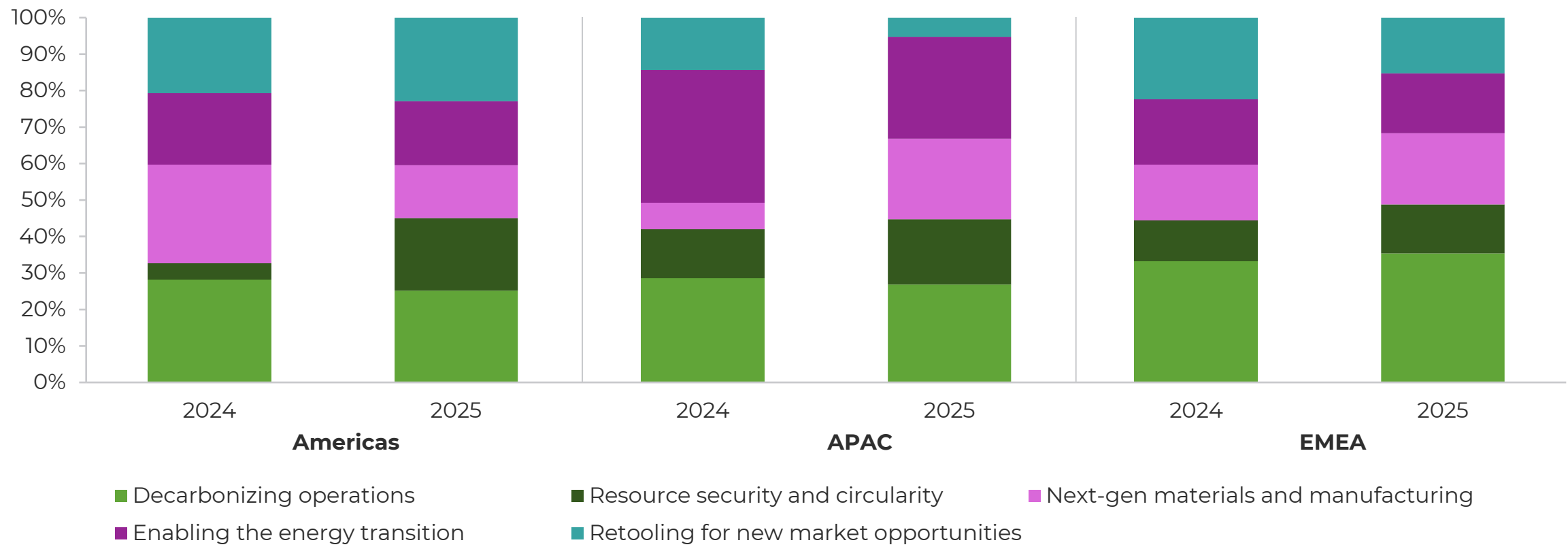


# Next-gen materials and manufacturing increased across all subindustries

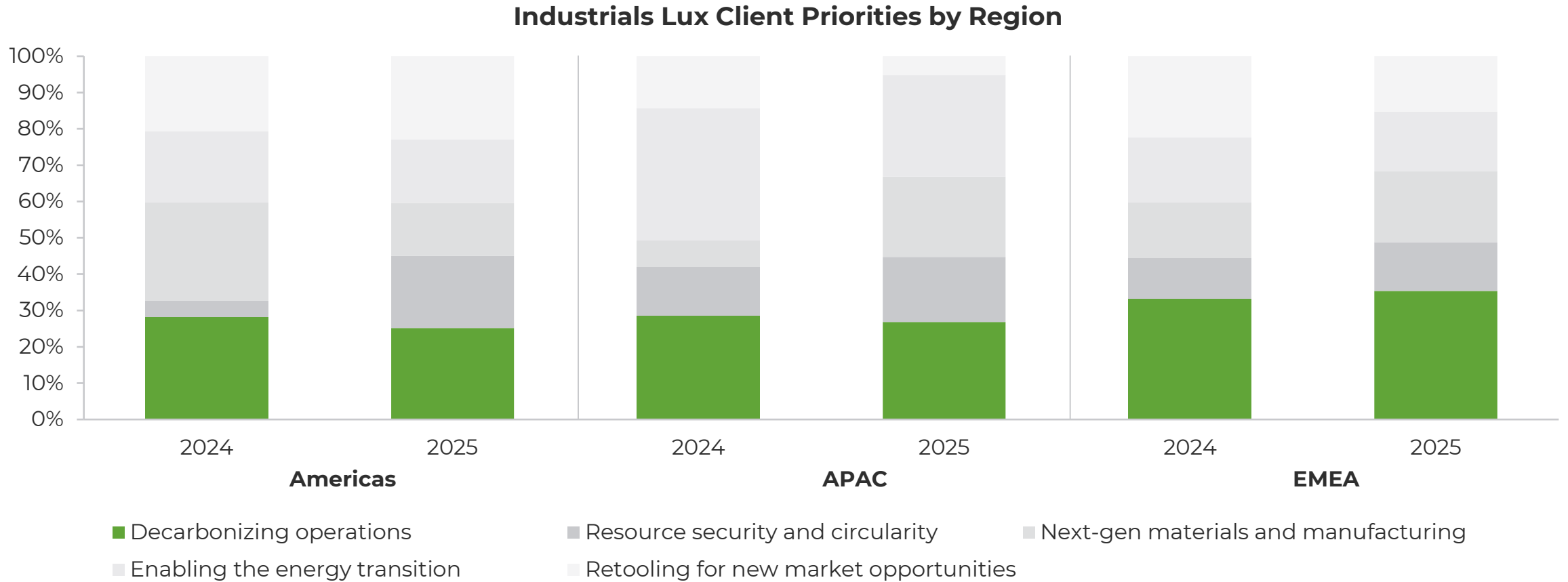


# Regional variations equally pronounced

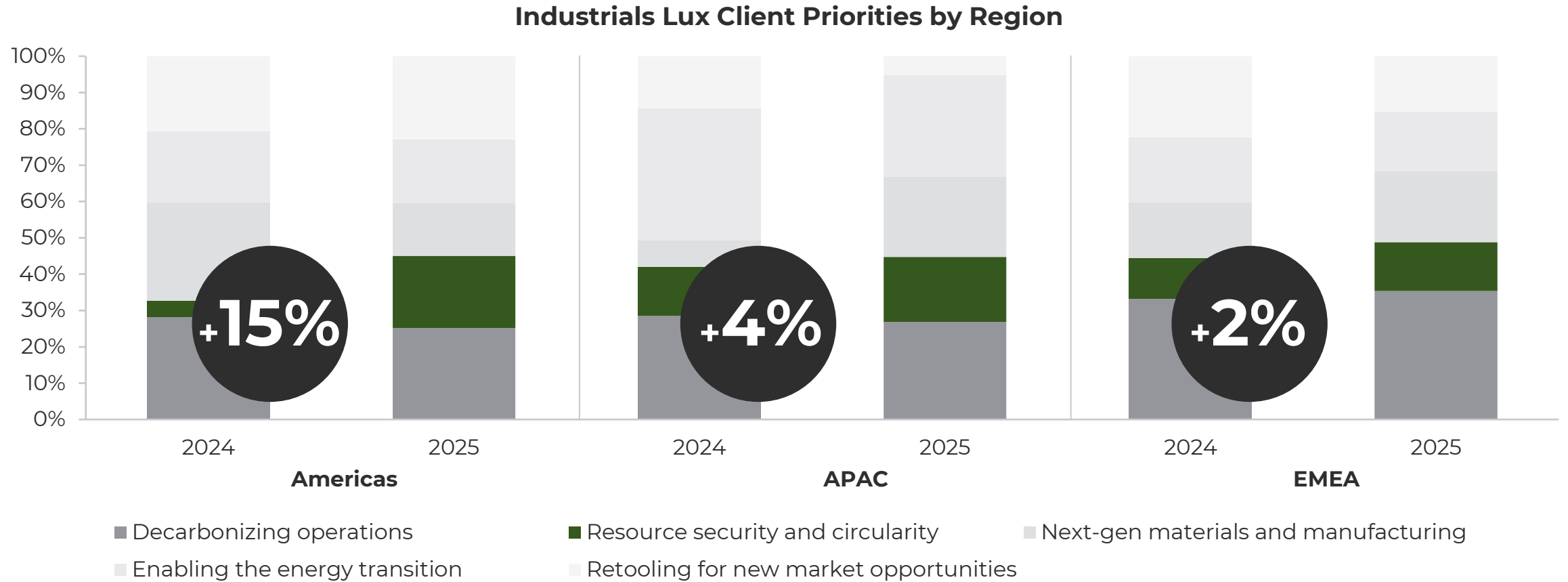
Industrials Lux Client Priorities by Region



# Companies maintaining decarbonization innovation despite inconsistent regulations

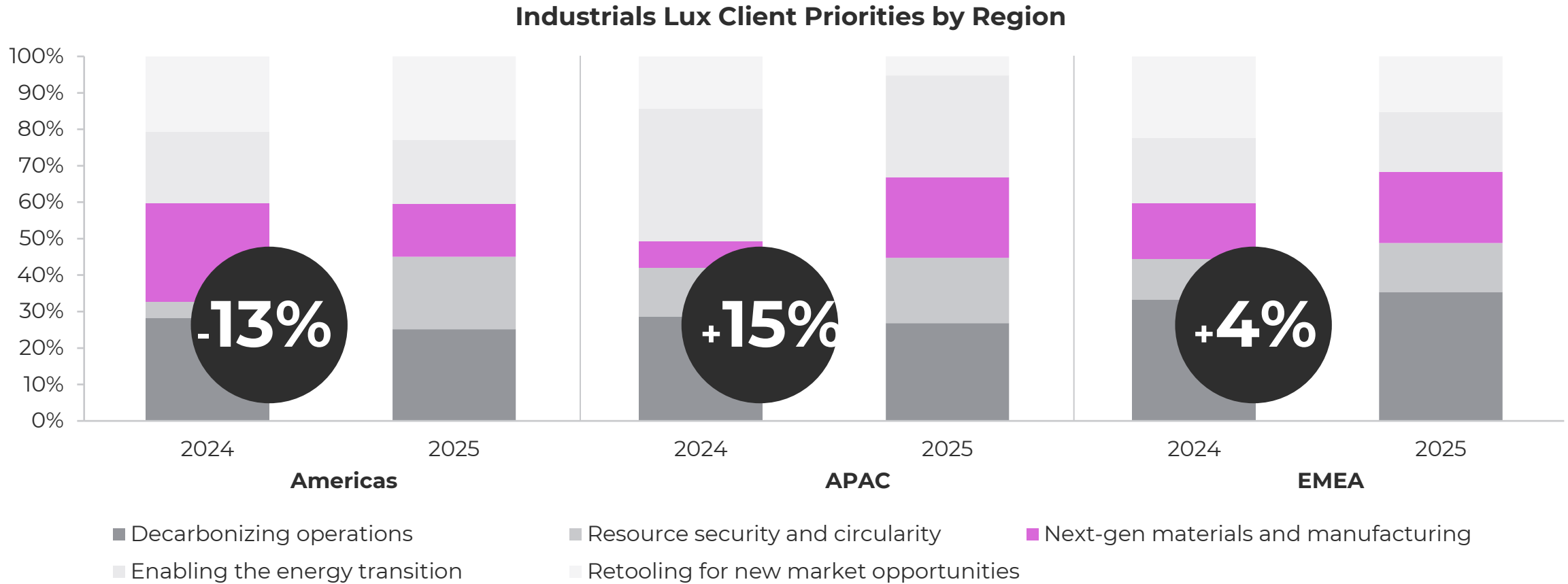


# Momentum for resource security will continue to rise





# Cutting-edge R&D is being deprioritized in Americas as innovation cuts hit companies



# Technologies of strategic interest span a wide range of competencies

TECHNOLOGY TOPIC	INDUSTRIAL CONGLOMERATES	MACHINERY & EQUIPMENT MANUFACTURERS	ENGINEERING & CONSTRUCTION
Advanced Plastic Recycling			
Structural Performance Materials			
Low-Carbon Ammonia			
Industrial Robotics			
CO <sub>2</sub> Utilization			
Advanced Sensors			
Thermal Management Materials			
Critical Minerals Extraction			
Novel Electronic Materials			
Photonic Materials			
Low-Carbon Combustion			
Industrial Wastewater Management			
Novel Nuclear Power Generation			
DERMS			
Hydrogen Storage and Transport			

# Diverse set of energy technologies highlights broad role industrials play

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<b>DERMS</b>			
<b>Hydrogen Storage and Transport</b>			

# Technologies enhancing functionality and performance in manufacturing

TECHNOLOGY TOPIC	INDUSTRIAL CONGLOMERATES	MACHINERY & EQUIPMENT MANUFACTURERS	ENGINEERING & CONSTRUCTION
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Critical Minerals Extraction			
Novel Electronic Materials			
Photonic Materials			
Low-Carbon Combustion			
Industrial Wastewater Management			
Novel Nuclear Power Generation			
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# Next-generation materials will usher in the next era of products and solutions

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# The Five Factors of Innovation Success



## Product

The function, differentiation, and potential role of the technology relative to existing solutions.



## Technology Readiness

The technology maturity indicated by advancements and technical milestones.



## Market Organization

How structured the market is for deployment, including regulatory and value chain dynamics.



## Market Readiness

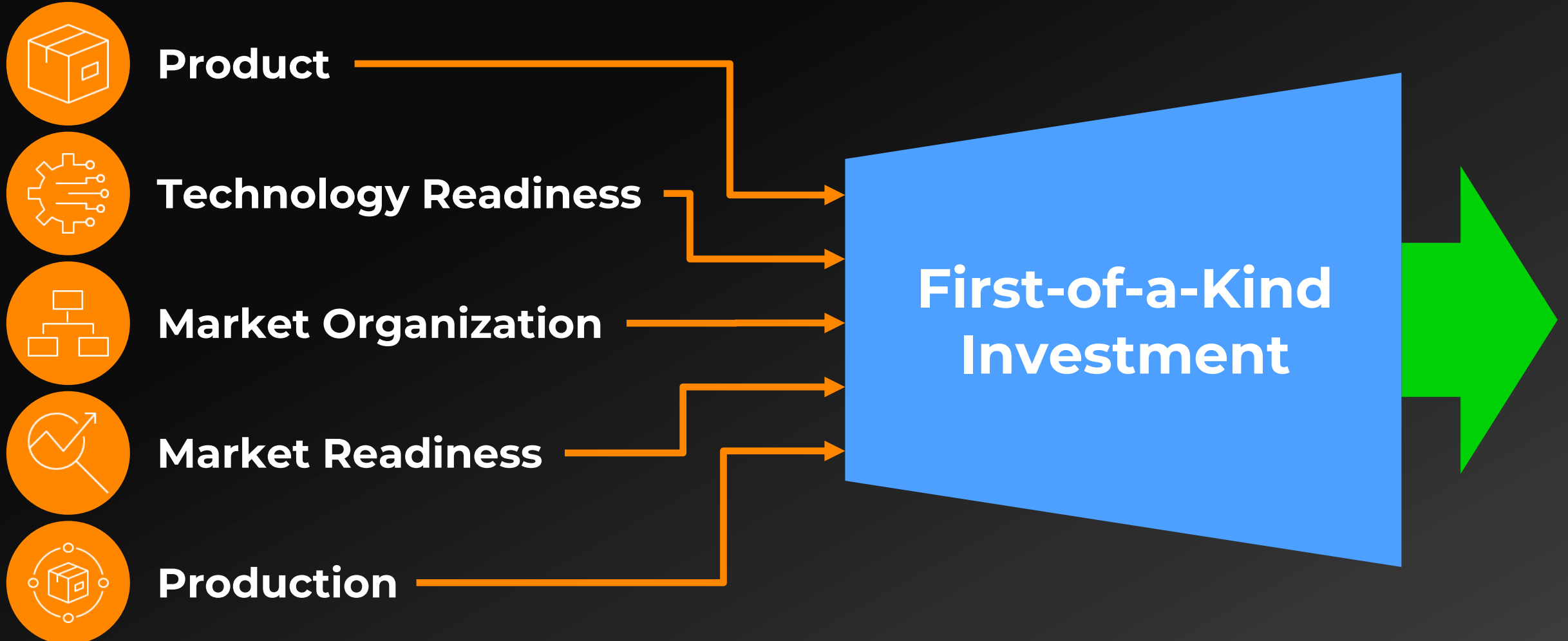
Current market needs and overall appetite for the technology.



## Production

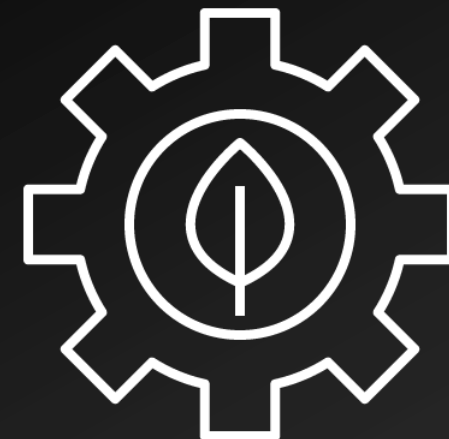
Manufacturing scale-up and offtake agreements indicating real-world adoption.

# Innovation success depends on the convergence of all five factors



# Decarbonizing Operations

Propell operations toward zero-emissions and zero-waste with innovative technologies and processes.



Decarbonizing hard-to-abate industrial operations remains essential, but 2025 headwinds have led to strategies emphasizing near-term efficiency over long-term transformation.

Prioritize pragmatic pilots and partnerships to derisk decarbonization solutions, preserving optionality while preparing assets for future shifts.

## INNOVATION IN ACTION

**CRH** acquired **Eco Material Technologies** for USD 2.1 billion, securing fly ash supply and logistics, underscoring the importance of feedstock supply security to scale low-carbon cement production.

# Decarbonizing Operations

“



How do **low-carbon heat** technologies compare to incumbents in efficiency, temperature, and cost?

”

“



What technical milestones most credibly demonstrate readiness for **low-carbon cement** beyond pilot scale?

”

“



Which policy frameworks, and infrastructure investments must align to enable **low-carbon steel** ecosystems?

”

“



Which end-markets demonstrate early demand for **low-carbon combustion**?

”

“



Which industrial companies have incorporated **low-carbon heat** solutions into their processes?

”

# Resource Security and Circularity

Ensure access to critical minerals, raw materials, and water through innovative and circular technologies and processes.



Rising geopolitical tensions, trade restrictions, and demand growth are elevating resource security into a strategic imperative for industrials.

Accelerate supply chain strategies that strengthen self-reliance, unlock alternative resources, and scale circular solutions amid supply security pressures.

## INNOVATION IN ACTION

**Chevron** acquired two lithium leases, reinforcing the entrants of oil and gas players, such as **ExxonMobil** and **Equinor**, into the lithium space and the growing momentum around critical minerals extraction.



# Resource Security and Circularity

“



Which **battery recycling** approaches enable closed-loop recovery of high-quality critical materials?

”

“



How robust are **critical minerals extraction** technologies across diverse sources and conditions?

”

“



What partnerships are being formed to deliver turnkey **industrial wastewater management** solutions?

”

“



What customer segments show measurable willingness to pay for **chemically recycled plastics**?

”

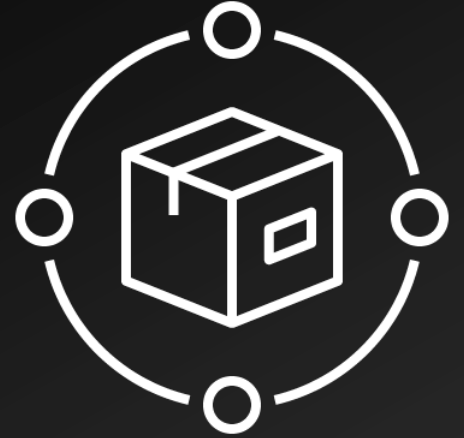
“



Which companies have commissioned or announced novel **critical minerals extraction** projects?

”

# Next-Gen Materials and Manufacturing



Integrate cutting-edge materials and processes to enhance functionality, performance, and reliability.

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Facing intensifying competition and rising performance demands, companies must accelerate adoption of next-generation materials for a competitive edge.

Prioritize strategic investments and partnerships in high-impact future platform materials to secure differentiation and long-term growth.

## INNOVATION IN ACTION

**Eaton** acquired **Boyd Thermal** for USD 9.5 billion, combining power management and liquid cooling, signaling intensifying competitive pressure across cooling and infrastructure suppliers to address data center demand.

# Next-Gen Materials and Manufacturing



“

What quantifiable performance and functionality gains can **advanced sensors** deliver?

”



“

Which **quantum technologies** are demonstrating verifiable performance consistency at precommercial levels?

”



“

How are regulations driving innovation developments for **advanced coatings** and **advanced composites**?

”



“

Which market segments show the strongest demand for the adoption of novel **thermal management materials**?

”



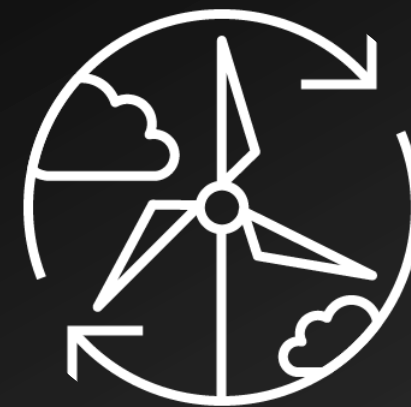
“

Which companies have incorporated **humanoid robots** into their operations?

”

# Enabling the Energy Transition

Empower and lead the energy transition by delivering essential solutions and technical expertise for future energy systems.



Despite the energy transition advancing unevenly, companies remain positioned to supply critical infrastructure, components, and expertise.

Prioritize scalable opportunities with regulatory clarity while selectively backing emerging technologies that can endure periods of subsidy uncertainty.

## INNOVATION *IN* ACTION

The **U.S. DOE** cancelled over USD 7.5 billion in funding, impacting hydrogen and direct air capture hubs, highlighting the challenges and setbacks of the energy transition headlining 2025.

# Enabling the Energy Transition



“ How do **fuel cells** compare to direct electrification across cost, flexibility, and regional market conditions? ”



“ What engineering risks does **novel nuclear generation** still need to derisk before commercial deployment? ”



“ How is the ecosystem aligning to derisk scale-up across regional **hydrogen storage and transport**? ”



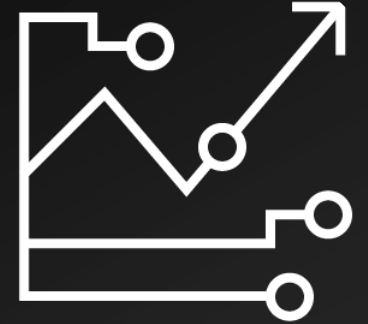
“ Which early adopters and use-cases exhibit the strongest pull for **thermal energy storage**? ”



“ What industrial complexes have integrated **low-carbon hydrogen** into site operations and at what scale? ”

# Retooling for New Market Opportunities

Leverage core expertise to develop disruptive technologies that will grow existing markets and expand into adjacencies.



Emerging opportunities do not always have clear outlooks and anticipating shifts and adapting offerings will remain critical.

Proactively retool products and solutions through a balance of acquisitions and partnerships to complement in-house R&D.

## INNOVATION IN ACTION

**Aquatech** acquired **Koch**'s Li-Pro sorption technology, IP, and licenses, integrating lithium extraction and refining into its PEARL platform, expanding its water treatment portfolio into a vertically integration lithium extraction solution provider.

# Retooling for New Market Opportunities



“ How do emerging **industrial wastewater management** technologies address unmet needs underserved by incumbent solutions? ”



“ What partners across the **low-carbon ammonia** value chain best position industrial companies for large-scale project delivery? ”



“ Have **CO<sub>2</sub> sequestration** and **utilization** projects begun operations and what challenges are they facing? ”



“ What technical risks and limitations remain for full-scale deployment of **industrial robotics** in unstructured environments? ”

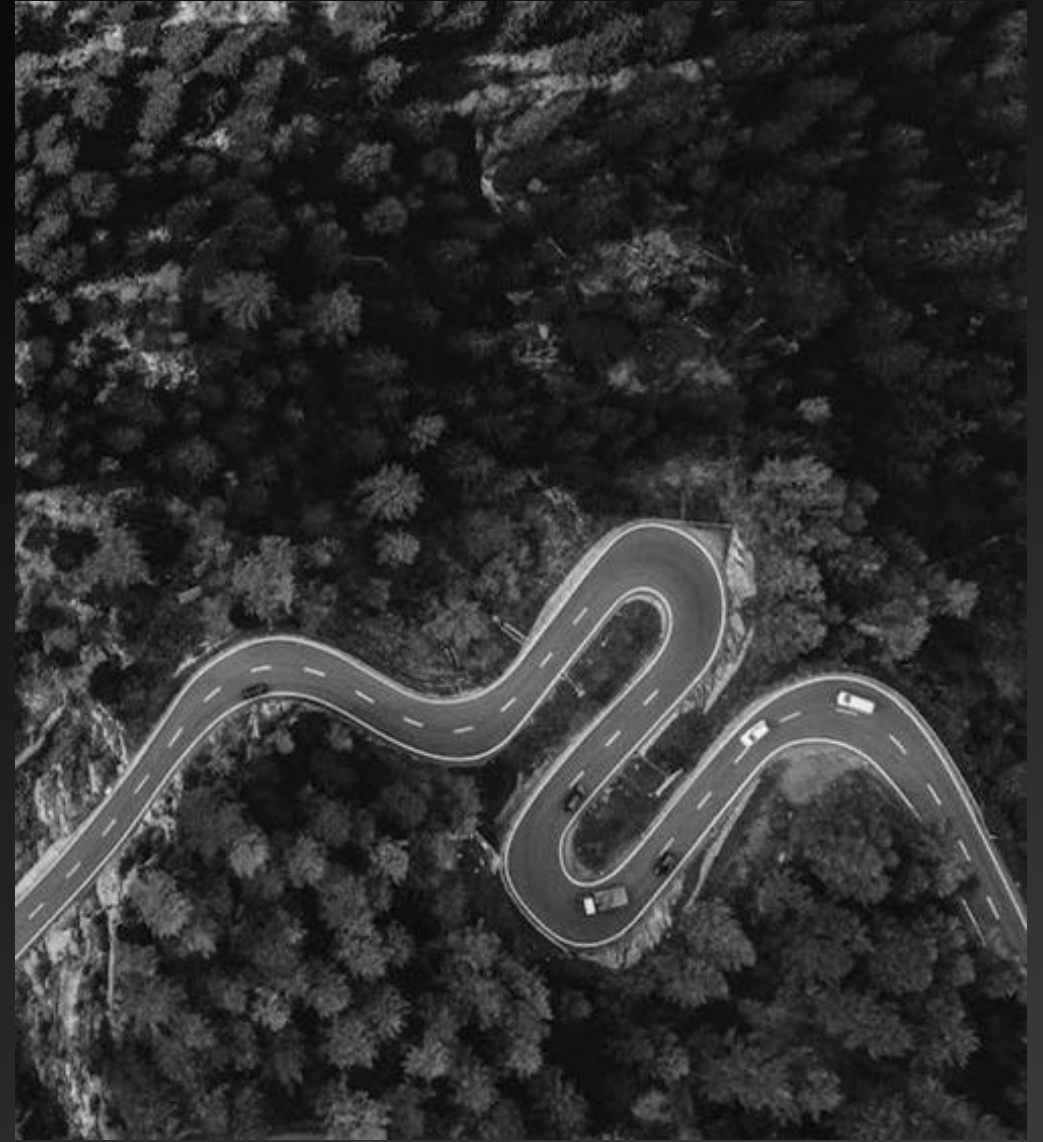


“ Which segments are poised for early adoption of **advanced membrane** solutions and wider commercialization? ”



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# Navigating innovation-driven transformation

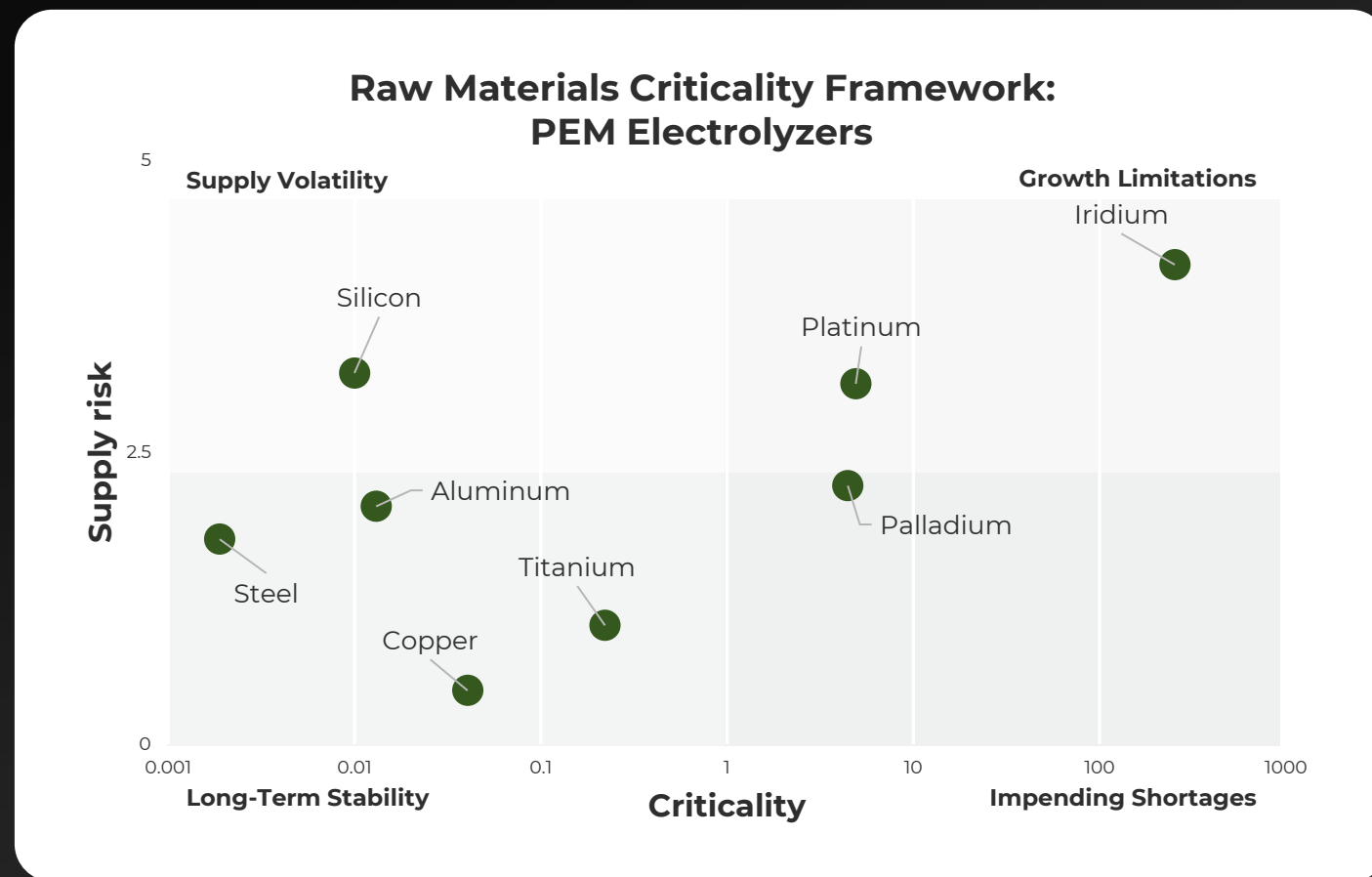




# Forecast risks lurking both upstream and downstream

Raw materials — both critical and noncritical — are integral to the industrials sector's products, services, and business operations.

Future-proof resilience through innovative measures by assessing raw materials supply risks and potential shifts in technology choices.



# Detect, interpret, and act on disruption systematically through weak signals

The heart of a forward-looking innovation strategy lies in the ability to detect weak signals.

Companies can transform noisy market data into actionable insights, positioning themselves for disruptions that competitors may miss.



**IMAGINE**



**LISTEN**

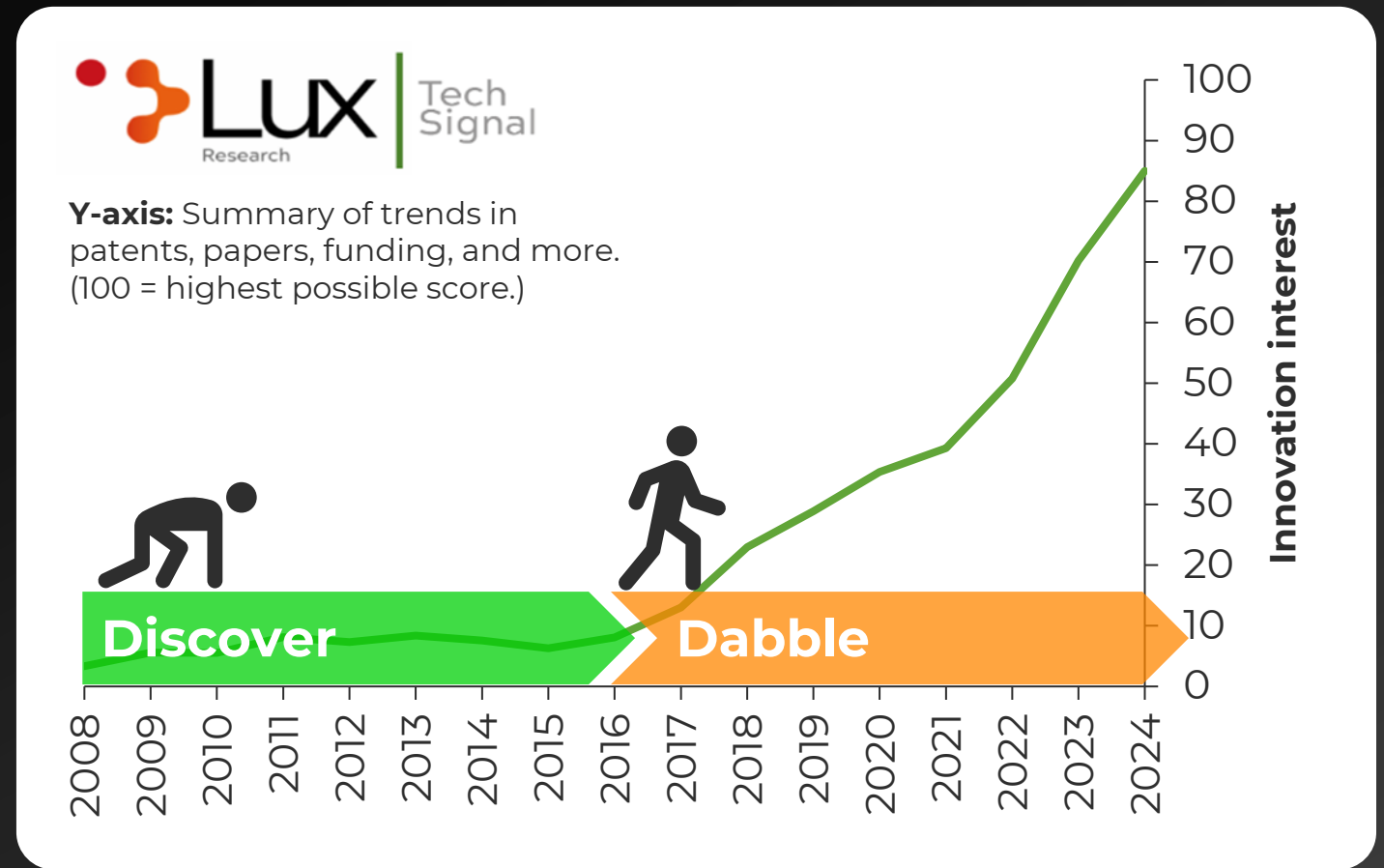


**AMPLIFY**

# Track the start of the conversation from scientific discovery to inventive dabbling

The Lux Tech Signal provides an integrated signal of science, investment, and commercialization.

Dabbling takes you in all directions and gives you direct insight on the potential impact of a scientific breakthrough.



# Key takeaways

1

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**Devise scenarios to prepare for the uncertain future(s).**

Target your innovation efforts precisely by projecting out various future states to pursue — these choices are key in accelerating transformation.

2

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**Assess innovations beyond technological momentum.**

Monitor developments across the five factors of innovation success to dial-in timing, size of innovation bets, and the strategic actions needed.

3

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**Pinpoint breakthrough and translational technologies.**

Do not lose sight of technology advancements gaining momentum and proactively fill your innovation funnel with noteworthy breakthroughs with near-term benefits.



# Thank You



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# 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.

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