

THE LUBRICANT INDUSTRY: WHERE ARE WE NOW AND WHERE ARE WE GOING?

A presentation for

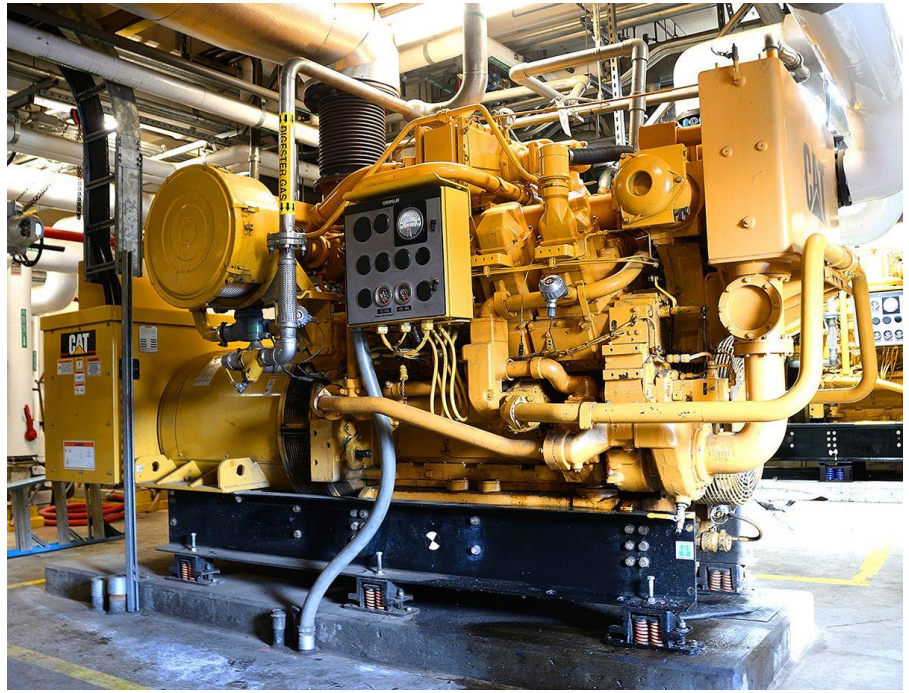
ABB

30th April 2024

Presenter: Annie Jarquin, Vice President, Energy

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Kline is a leading insights firm offering a complete spectrum of services in market intelligence and related advisory services across the lubricant value chain and key end-use applications

MARKET RESEARCH PUBLICATIONS & SUBSCRIPTIONS

Identify market opportunities and create action plans with off-the-shelf products (reports, databases, intelligence centers)

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Leverage Kline content, while customizing the granularity, scope and timing of the research for your specific business needs on single-client basis

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80% Of top 20 lubricants producers served

30+ Reports published annually, covering all key market segments

70% Country markets covered

ACTIVE AT ALL KEY INDUSTRY EVENTS:
ICIS, BLM, UEIL, ACI, STLE…

Agenda

- **Overview: Global and regional lubricant demand patterns**
- Long range forecast: Electrification scenarios and impact
- Opportunities: Key forces shaping the outlook
- What it means – Kline perspective

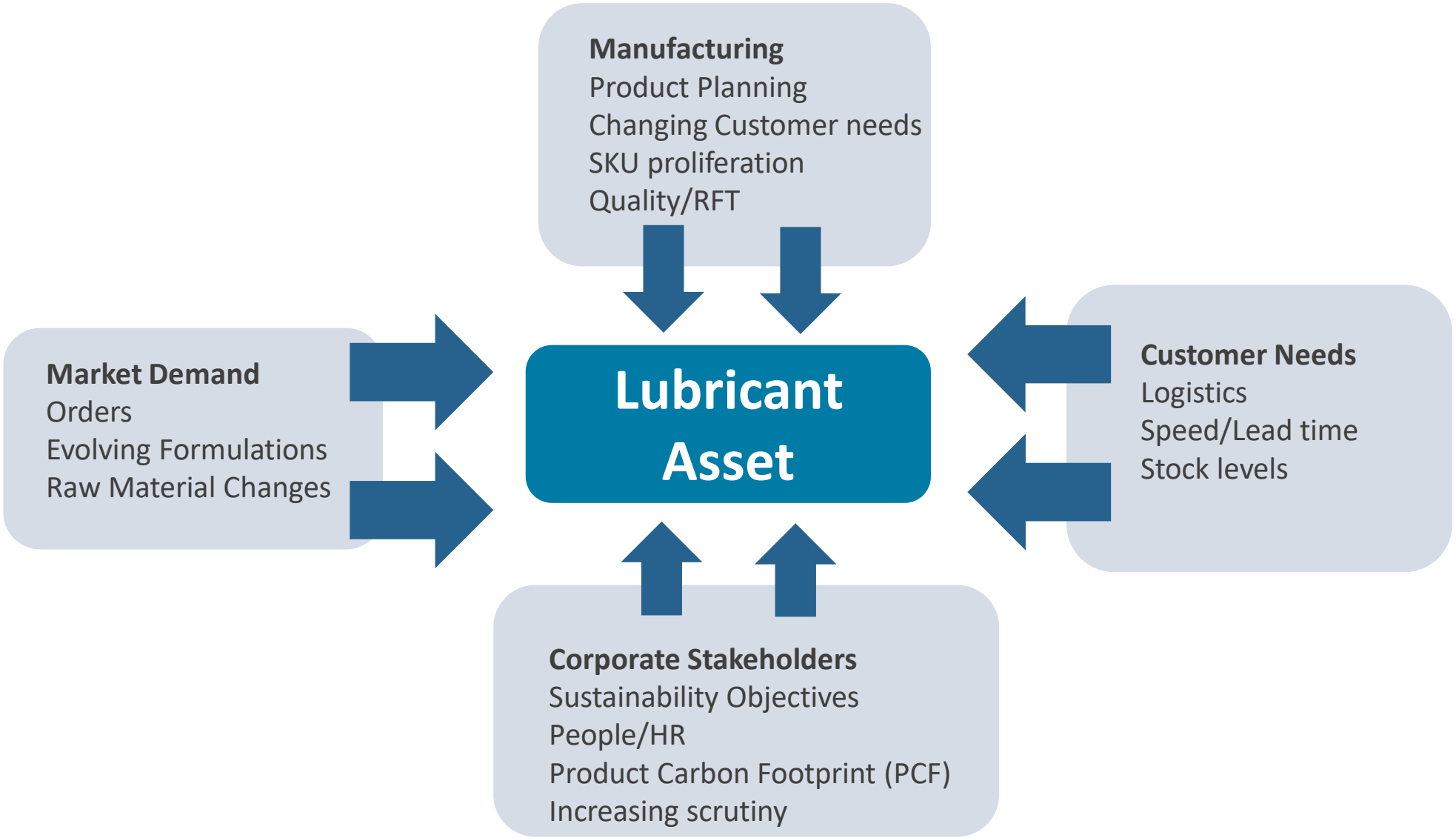
Company Mission and Vision

- Single Plant Mission and Vision
- Asset within local/globally network Mission and Vision
- Toll/Contract Blender Mission and Vision
- Own brand and contract Mission and Vision

Mission/task of the Asset:

- *Handle all the product complexity of the organisation*
- *Take orders from Planning and execute to the quality and speed KPIs*
- *To provide OEMs with all first fill volume*
- *Handle all bulk products for the company and efficiently ship regionally*

What is the “job” of a lube blending plant?



The lubricant industry globally has been through unprecedented times in the past few years, with additional supply chain disruptions on top of COVID impact



2021 Base oil shortage due to low fuel demand => soaring prices

Lubrizol factory fire in Rouen in late 2019 => Additive shortage

Conflict in parts of the Middle East

Major weather events

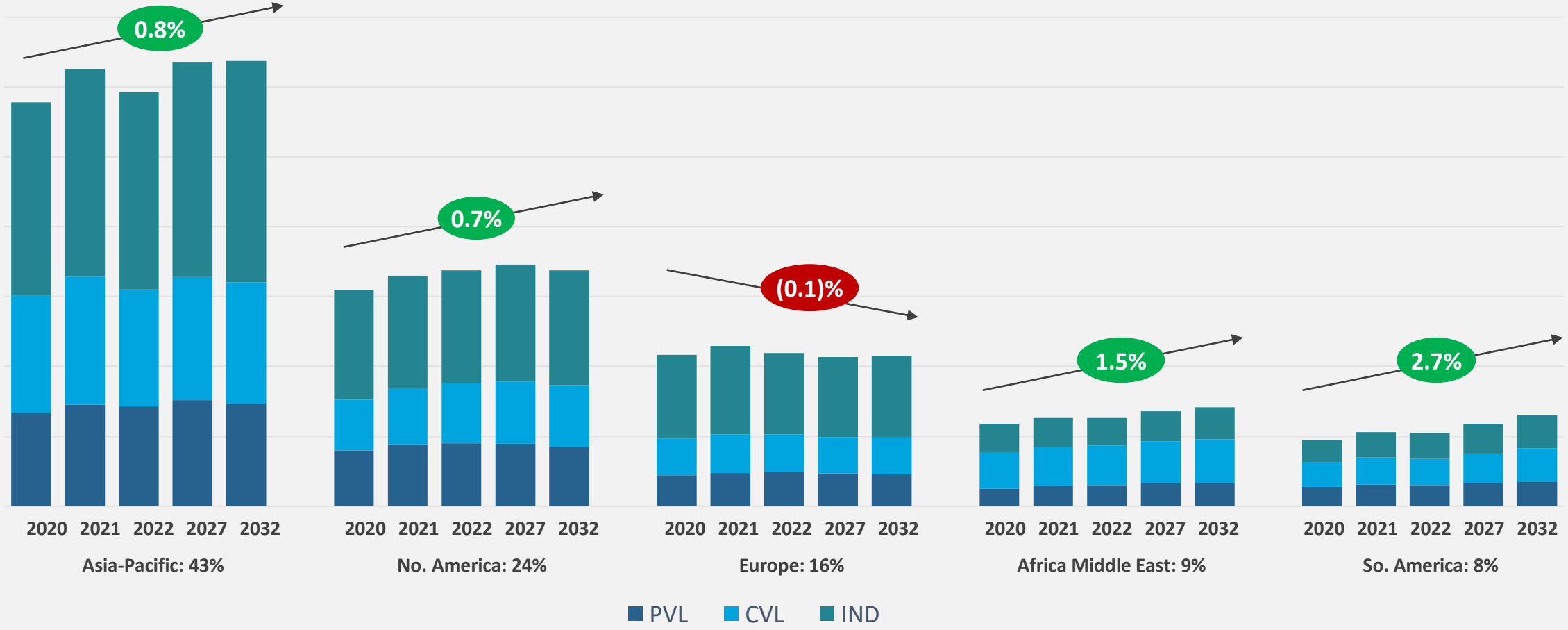
Chemtool fire 2021 => Grease capacity shortage

2023 Cost of living crisis leading to longer consumer oil changes

Russian/Ukraine War leading to European energy crisis

GLOBAL: Overall finished automotive and industrial lubricants demand reached ~44BL in 2022, down 2.6% from 2021, and still below pre-pandemic ~46 BL in 2019

Estimated Global Finished Lubricants Demand By Region And Market Segment, 2020 To 2032

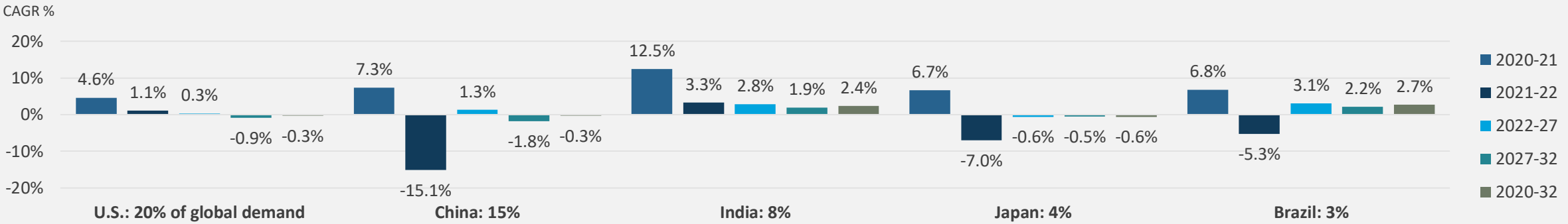


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* Includes Process Oil, MWF, Marine, Aviation. In 2022, process oil accounts for 36% of total Industrial Oils and Fluids demand.

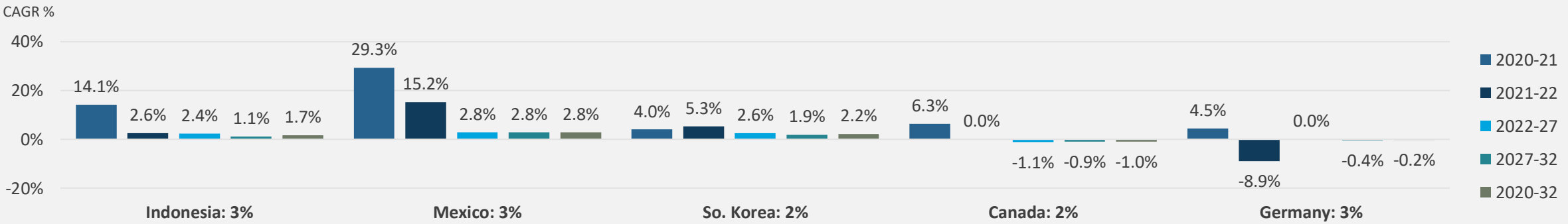
LEADING MARKETS: The U.S. and China will continue to influence the global lubricants industry however India and Indonesia are emerging as leading markets to shape the industry over the next decade and beyond

Historical_Forecast Overall Finished Lubricants Activity In The Top 10 Leading Markets, 2019–2032



TRENDS, FACTORS, OPPORTUNITIES SHAPING FINISHED LUBRICANT DEMAND IN ALL MARKETS/REGIONS

- Pandemic emergence and pace of recovery, government spending/investment, inflationary pressures, supply chain disruptions, semiconductor chip shortage, rising fuel prices, Russia/Ukraine war
- Recovering passvehicle production/sales, EV adoption/penetration, infrastructure/construction activity, manufacturing reshoring, inconsistent WFH and commutation patterns, personal mobility, sustainability, industrial maintenance practices, renewable power gen, synthetics, lower visgrades, ODI, increasing competitive intensity from alternatives to global majors

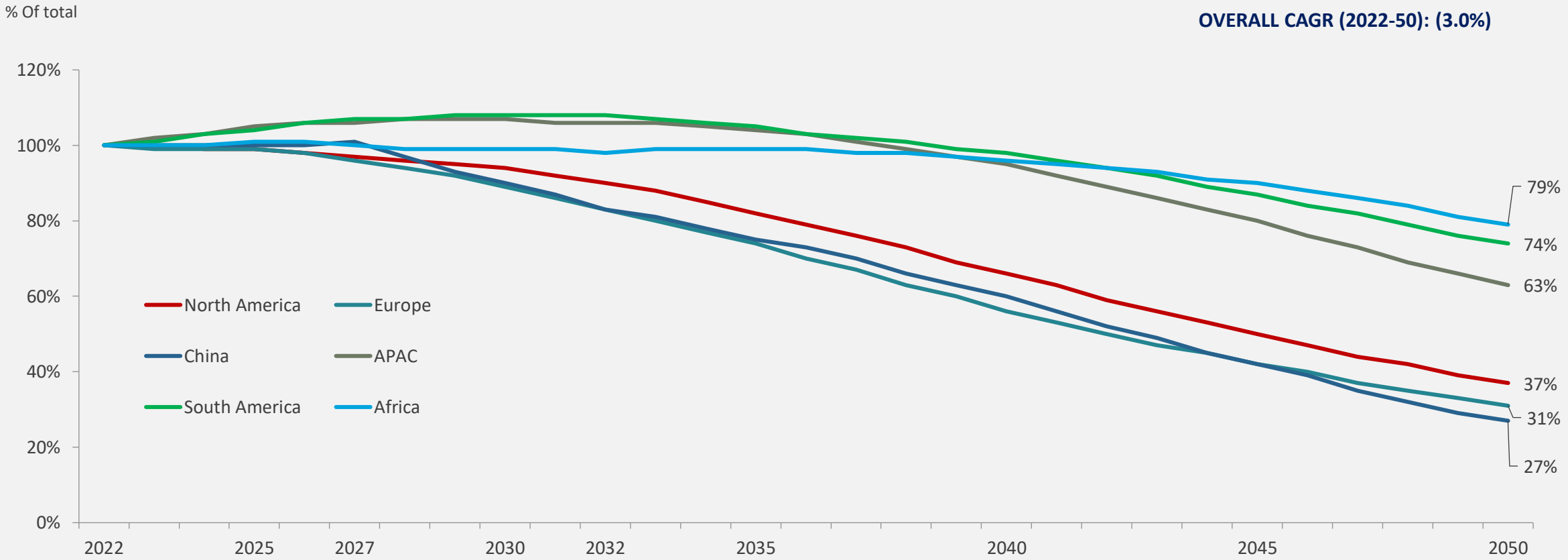


Agenda

- Macro signals – Context for Lubricants
- Overview: Global and regional lubricant demand patterns
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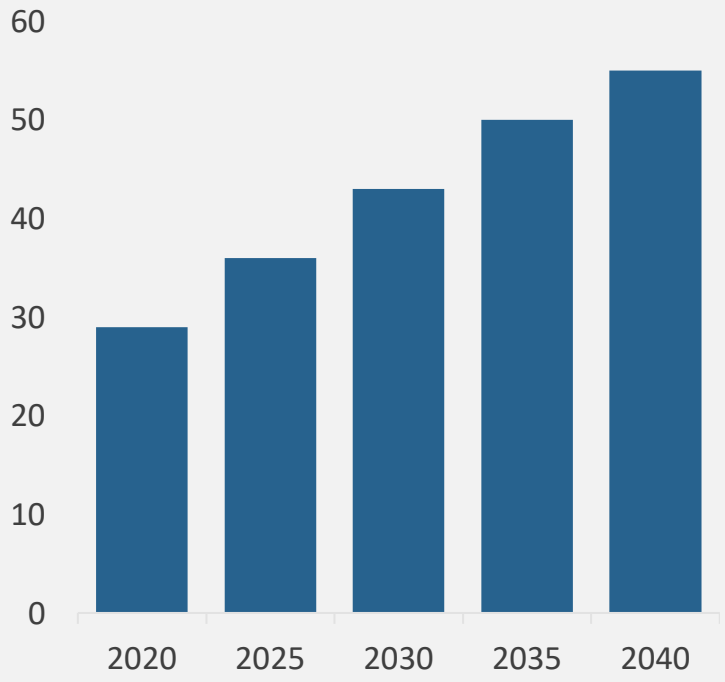
About 70% of the PCMO market in China and Europe will be lost by 2050 under the baseline scenario

Baseline PCMO Demand Forecast By Region, 2022-2050



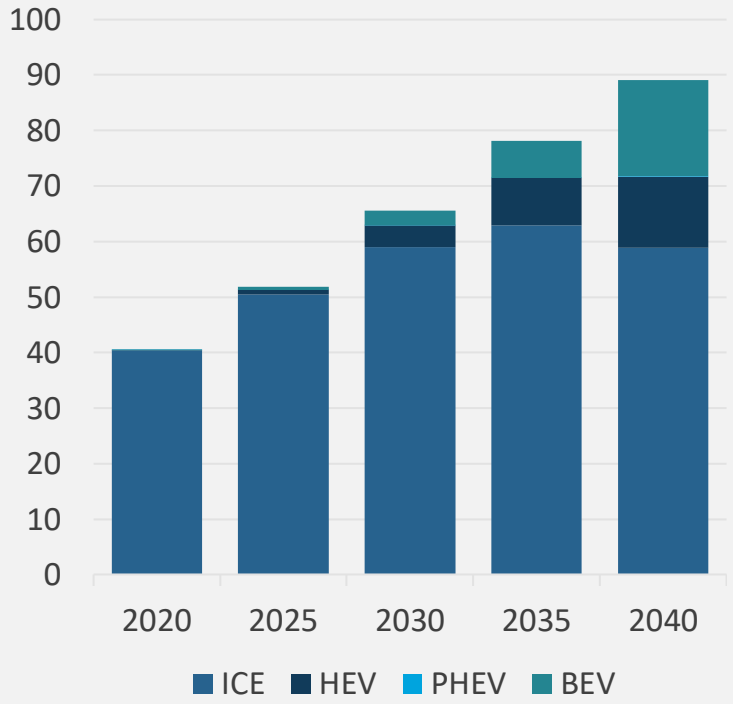
Moving beyond the engine oil decline: EV fluids as a silver lining for growth => A CASE OF INDIA => How demographics and electrification pull the market in different direction

Car Penetration Forecast for India, Cars per 1,000 people



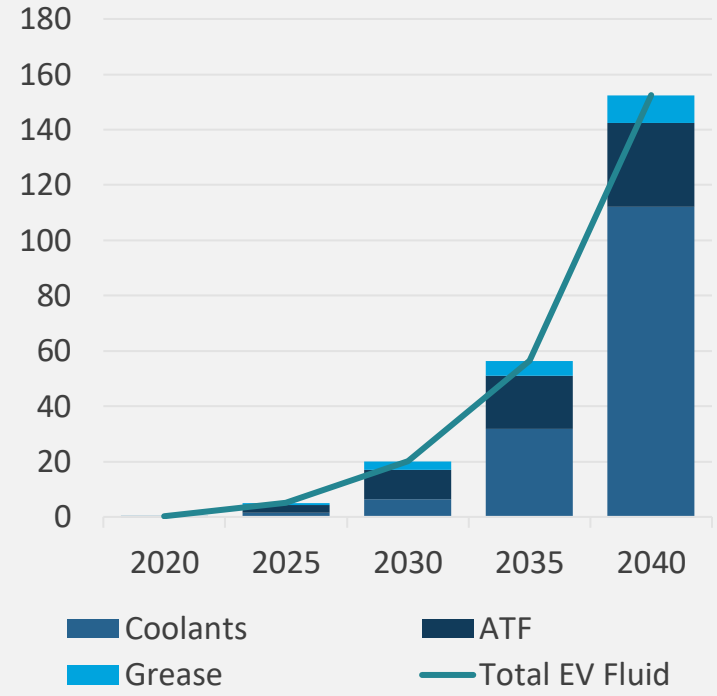
- Car penetration in India is expected to almost double between 2020 and 2040.
- Car sales are not only growing in cities but also in rural areas with the latter accounting for 44% of Maruti Suzuki's overall sales in 2022.

Car Parc in India by Powertrain, Million Units



- In 2022, 99% of the total car parc comprised of ICE vehicles.
- ICE and HEV parc will continue to grow till 2040.

Passenger Cars EV Fluid Demand in India, Million Litres (ML)



- EV fluids will witness rapid growth after 2025.
- Coolants will witness the most significant growth in due to the increased sale of EVs.
- EVs require much larger volumes of coolants to cool the inverter, electronics, and battery.

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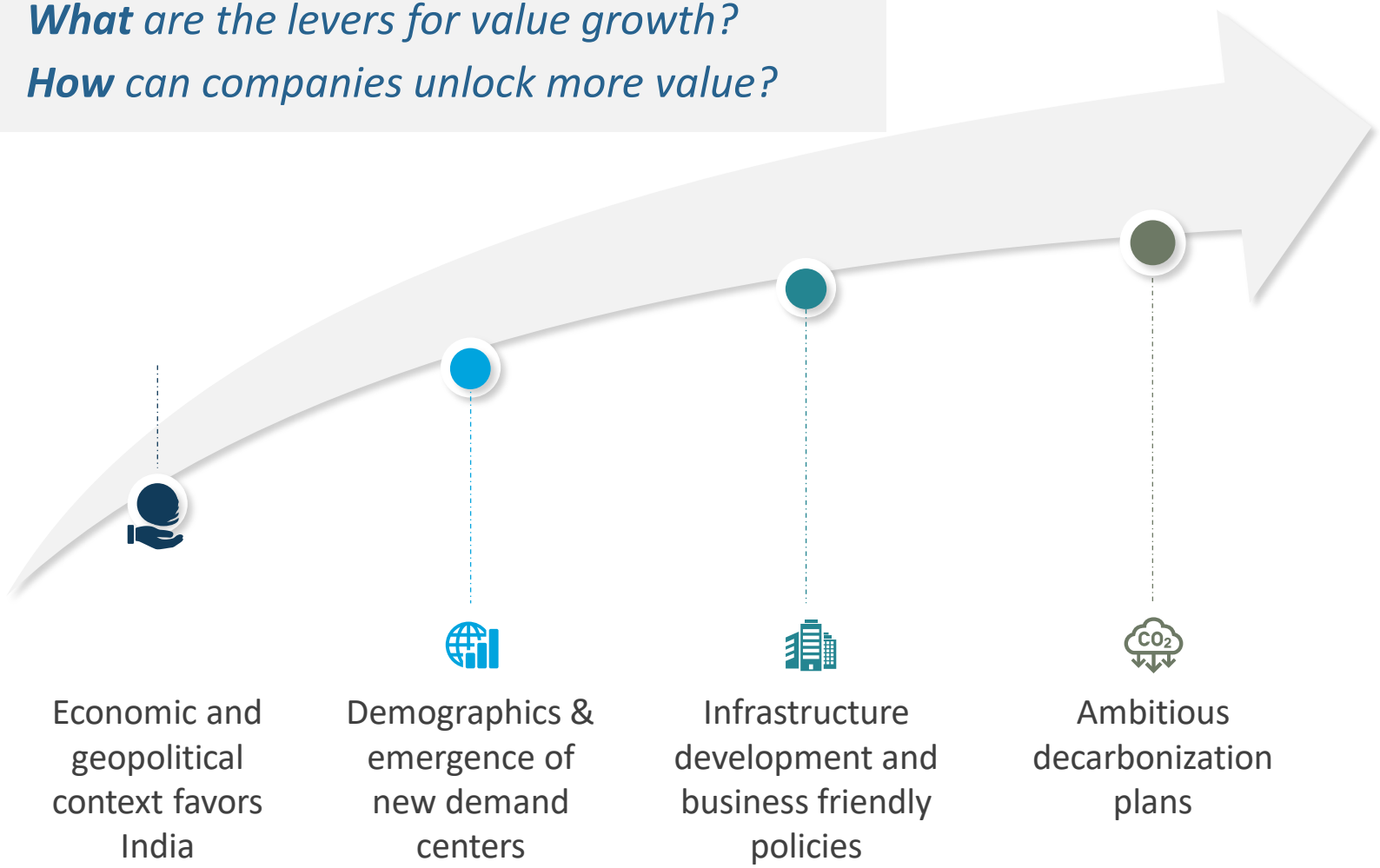
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Growth Markers and Attributes to Seek



- ***Why*** *Value over Volume?*
- ***Where*** *are these value pools?*
- ***What*** *are the levers for value growth?*
- ***How*** *can companies unlock more value?*



Rapid non-linear lubricants market growth

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WHAT ARE THE VALUE LEVERS: Key three interconnected megatrends – have varying degree of impact across B2B/Industrial sectors; companies will need to align their customer value proposition with these trends



	2010s	2020s	Relevance for Lubricants Sector
Digitalisation			• Smart Manufacturing; Robotics • Predictive Maintenance • E-Commerce, O2O Channels
Servitization			• Mobility-as-service • Equipment-as-service • Lubrication-as-service
Sustainability			• Decarbonization of Transport, Energy, Industry • Circular Economy/ Recycling, process & design changes

DIGITILIZATION: An enabler for sustainability via operational efficiency and transparency, also a key longer-term value driver for lubricants and performance fluids

DIGITALIZATION

Trends in B2B Sectors

- *Production* ***Automation***
- *Industrial Internet of things (IIoT)*
- *Asset autonomy* ***/Smart Assets***
- *Enabled technologies:* ***3D Printing;***
- *Enhanced internet access, mobile internet,* ***5G Infrastructure***

What changes …

- *New applications =>* ***Robotics***
- ***New stakeholders****/new ecosystems emerge: Platforms, equipment data*
- ***Data generated*** *by smart equipment enables new products and services*
- *Growth of digitally enabled* ***channels****:* ***E-commerce****,* ***Online-to-offline*** *(O2O), metaverse*

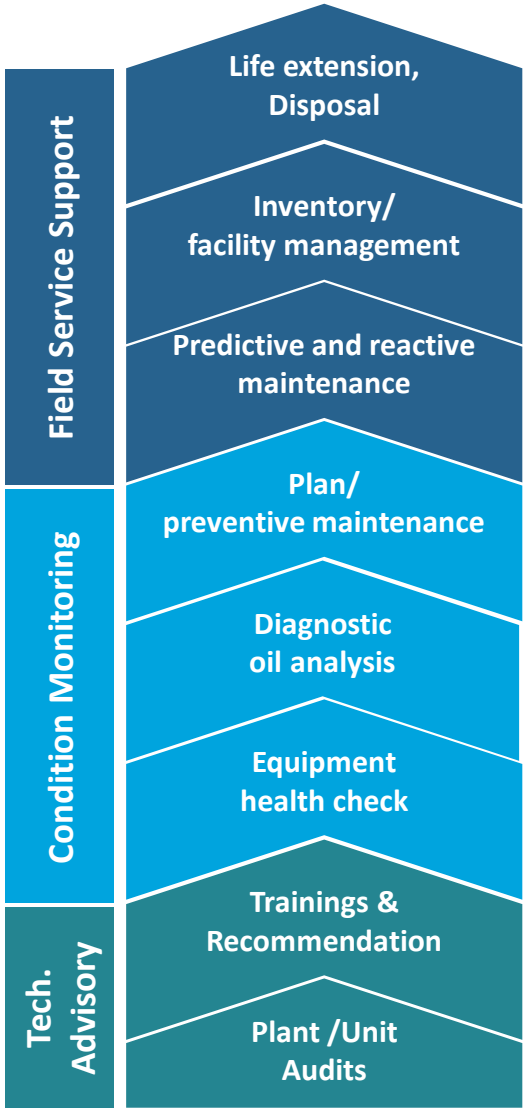
Impact on lube products and services

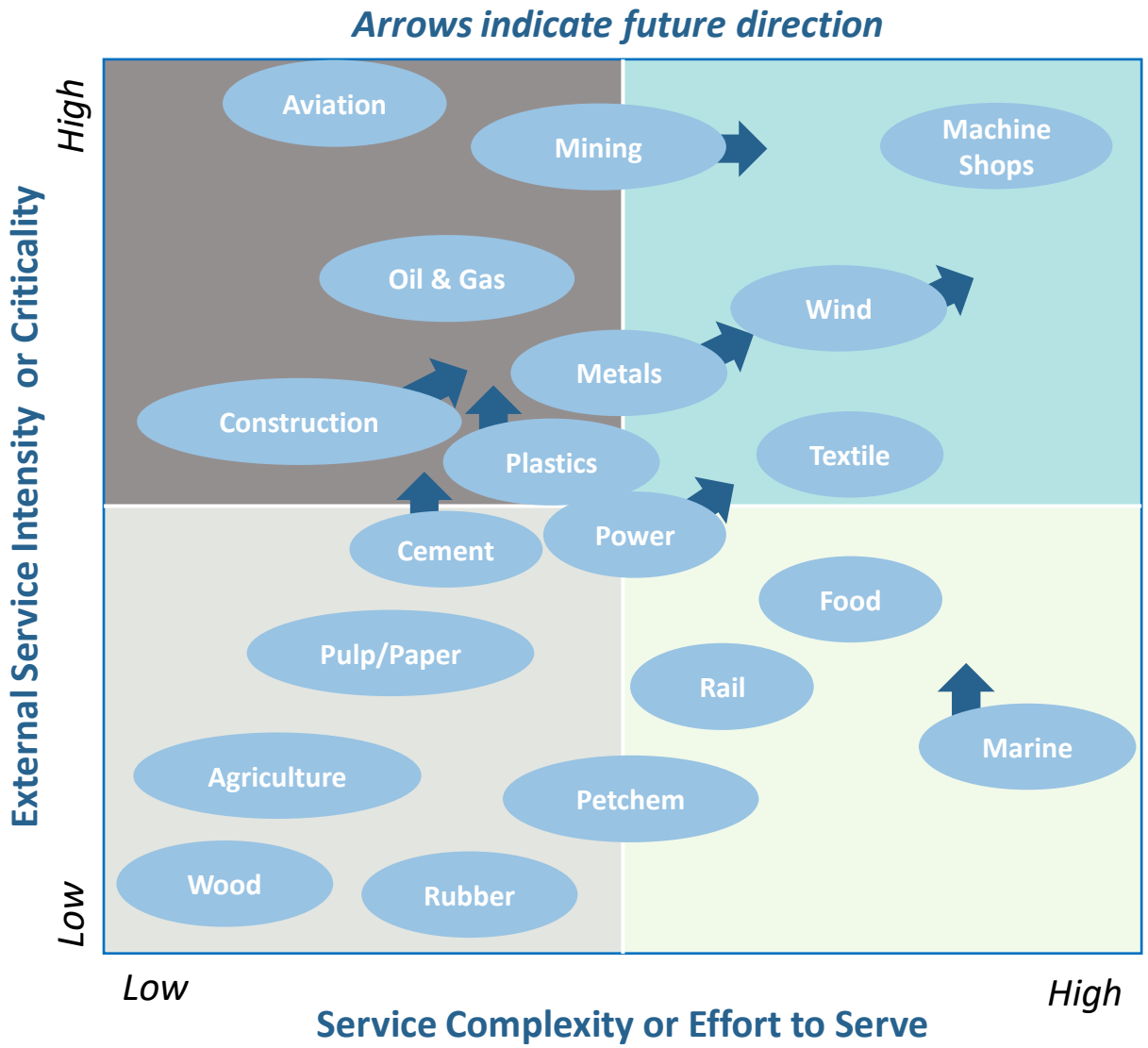
- ***New products****: e.g. Greases, gear oils for Robotics; Immersion cooling*
- ***New partners****: e.g. OEMs, Integrators (ABB, Siemens), service providers (SKF)*
- ***New/enhanced services****: Connected maintenance, equipment condition monitoring, total fluid management*
- ***New ways of making marketing claims*** *(base on real-time evidence generated from the connected equipment*

Signposts

- *5G Roll-out/coverage*
- *Manufacturing robot density in key sectors*
- *Pace of industrial parc renewal (% of smart equipment sold or retrofitted)*
- *Sales and installation of sensors*
- *Digital pilots in specific sectors*
- *OEM data service launches*

SERVITIZATION: Some sectors are more complex and service-intensive than others => Entering and growing business in the former will require extensive capabilities and commitment of time and resources





Implications

- **Where/what/how's** need to be adequately figured out
  - Opportunity assessment
  - Ecosystem examination
  - Customer value proposition
  - Contract Engineering
  - Business models
- **Key consideration** for lubricant suppliers: **Profitability** of the overall business incl. new biz models



A Question of Strategy: Do your success metrics reflect the emerging trade-offs between volume and value?

Growth Ambition

Volume Lens

AND/OR?

Value Lens

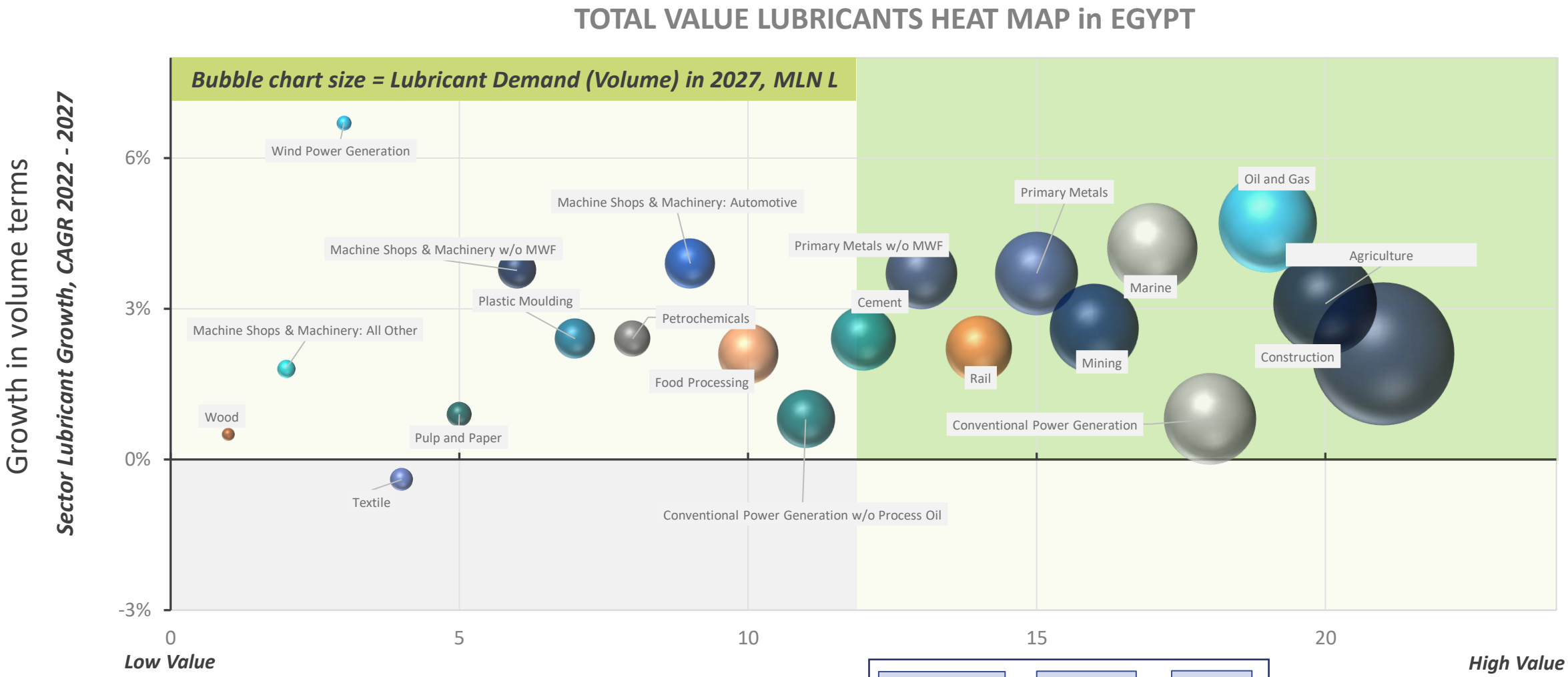
Challenge: We need value market metrics and ways of identifying the value pockets to balance the two

Where to play? => Introducing the dimensions of value mapping: Who does not love a good 2x2 matrix…

VALUE MAPPING FRAMEWORK



Example - Value lens in Egypt: On-highway, Construction, Agriculture and Oil & Gas are the biggest segments in total value terms



Sustainability: What's new?

MA'ADEN AND SHELL SIGN MOU TO EXPLORE DECARBONIZATION OPPORTUNITIES

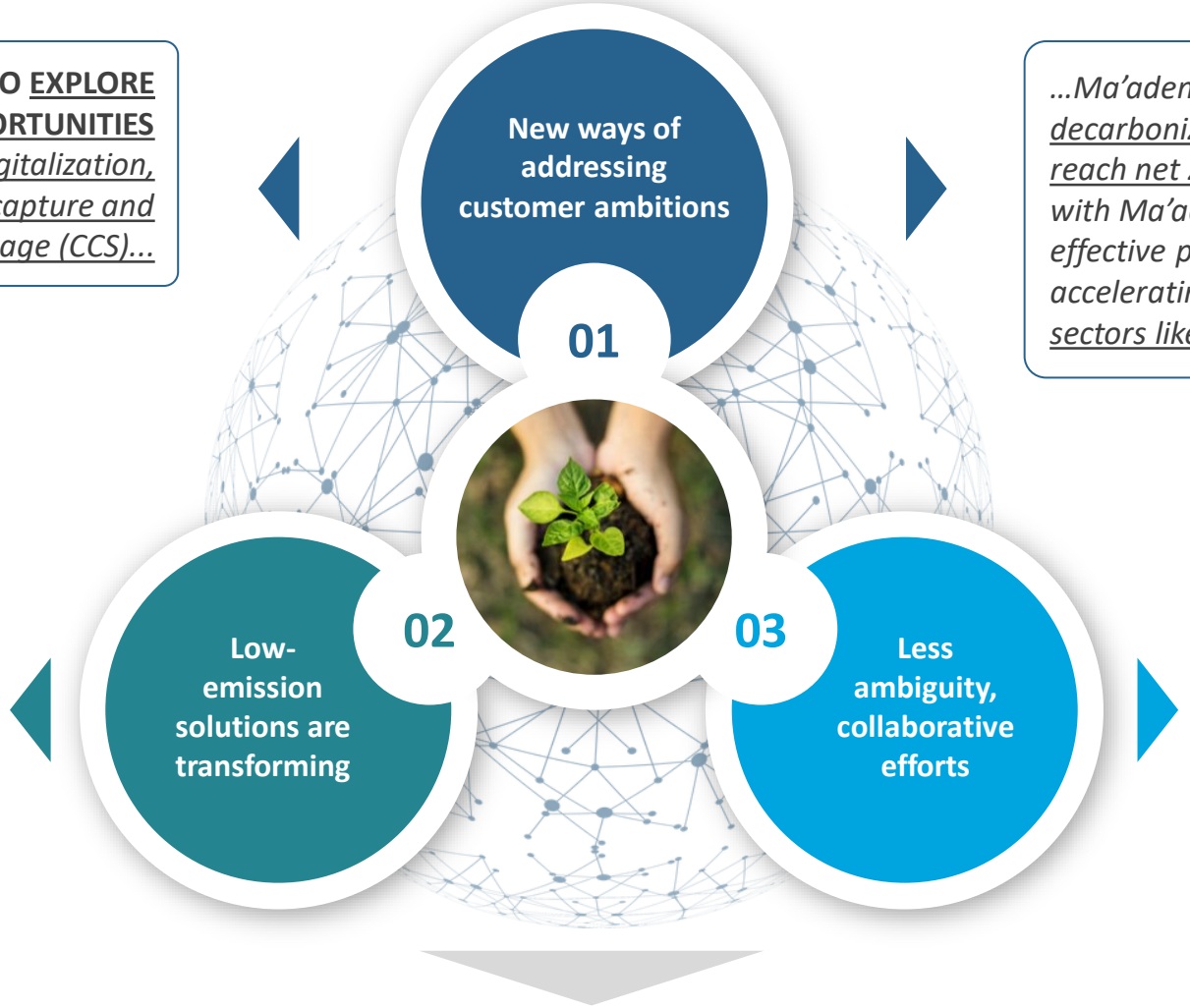
…. Including but not limited to, digitalization, electrification of fleet and carbon capture and storage (CCS)...

Renewable Energy in Lube Assets

- "Green Power Contract"
- Solar power
- Contribution of KWh/ton produces => CO2 emitted/ton produced into PCF

Regulation in works:

- CSDR (Central Securities Depositories Regulation) and other transparency frameworks will have – or force - companies to take real action on their voluntary climate commitments.
- Carbon Border Adjustment Mechanism (CBAM)
- Extended producer responsibility (EPR)



…Ma'aden and the opportunity to play a role in decarbonization in Saudi Arabia to ultimately reach net zero ambition by 2060. The agreement with Ma'aden demonstrates the vital role of effective partnerships and how it plays in accelerating decarbonisation in hard-to-abate sectors like mining

Fewer excuses:

- LVC metrics are crystalizing:
  - Virgin vs recycles/renewable
  - PCF Cradle-to-gate
  - Performance-in-use
- Circularity
- UEIL/API PCF guidelines are levelling the playing field
- Chemical industry is a helpful benchmark
- ALIA is increasingly active – best practices + benchmarks

Related questions: Do we have the right channels, partners and capabilities/USPs to address the future needs of our key sectors, existing and emerging customers?

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Re-refined Base Oil (RRBO) MUST NOW BE AT FRONT AND CENTER OF LUBRICANT MARKETERS' SUSTAINABILITY STRATEGIES



Fighting used oil burning becomes moot; as ERP programs are more widely adopted, and move beyond controlling illegal discharge of waste oil, their focus will be not on banning used oil burning, but in encouraging or mandating regeneration

RRBO Quotas operate from the market backwards, and will pull used oil through to re-refining and away from burning

Lube marketers must come to realize that RRBO must be embraced, not resisted (actively or passively)

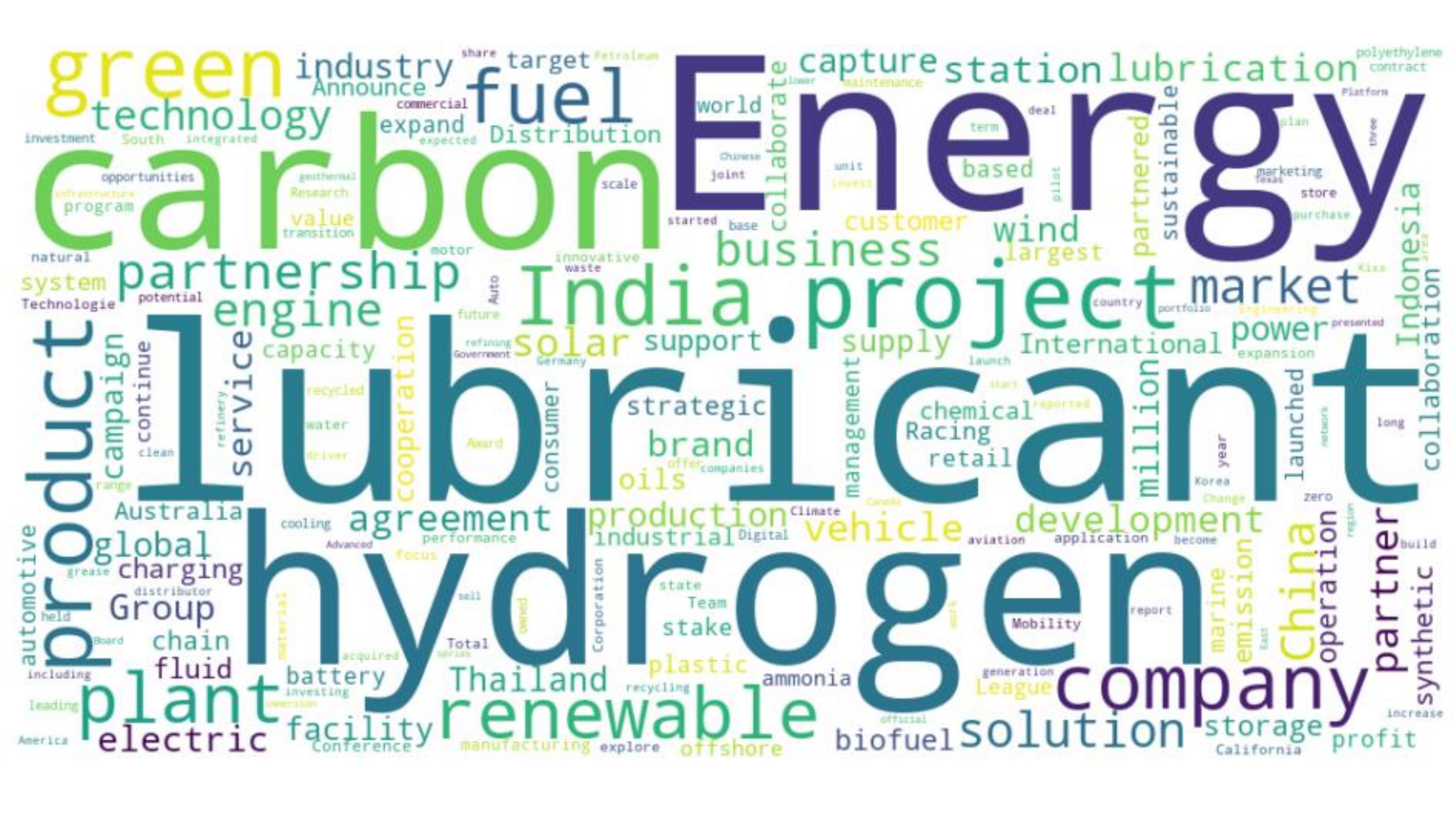
The nature of used oil collection and re-refining has resulted in the largest and most successful operators being integrated (even to the point, for some, of becoming lubricant blender/marketers

We expect few, if any, major lube marketers to enter used oil collection and re-refining directly, as operators; they will be RRBO offtakers, and possibly guarantors of used oil collection and/or re-refining investments made by their alliance partners

To date, no lubricant marketer is a producer of RRBO

Since so few integrated used oil collector/re-refiners exist today, the opportunities for alliances with lubricant marketers are limited; there are first-mover advantages for those lube marketers

Mid-size lube marketers, notably those with major positions in their home markets, may be more likely to consider direct investments in the used oil supply chain


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share
Petroleum
Announce
fuel
capture
station
lubrication
polyethylene
contract
technology
commercial
world
maintenance
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Platform
deal
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Distribution
investment
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investing
leading
electric
facility
renewable
solution
storage
profit
America
Conference
manufacturing
explore
offshore
biofuel
official
California
increase

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Key takeaways

- Most likely life is going to get more complex
- How future proof is your plant to address this growing complexity
- Do your understand the “job” of the asset?
- Have tools in place to understand evolving needs of end-users by sector e.g.
  - Which sectors have the biggest sustainability targets?
  - How is the equipment parc changing within each sector?
- Look at longer term trends to determine how future proof your product portfolio is
- Don’t only look at volume, but value and how it will evolve.

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