

A Glimpse into the Future of Pharma Operations: Strategic Priorities for the next decade

Keynote presentation

June 2024

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Four key observations on the global business landscape



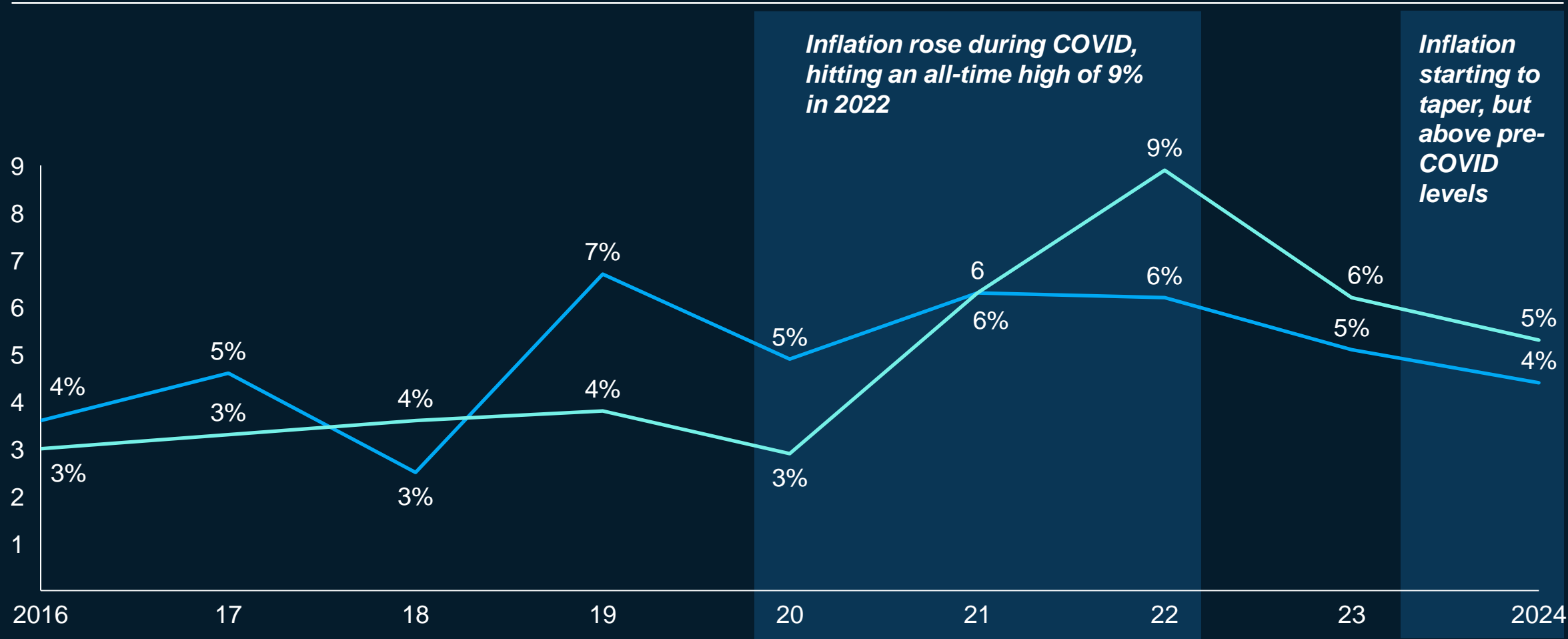
- 1 Inflation rose 3x during 2020-22 and is starting to taper**
Inflation is off its peak but continues to remain higher (5-6%) than the 2011-20 average (3-4%)

1. Inflation rose 3x during 2020-22 and is starting to taper in 2024



Inflation (consumer prices), %

— India — World



Four key observations on the global business landscape



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Inflation is off its peak but continues to remain higher (5-6%) than the 2011-20 average (3-4%)



2 Technology-led disruptions are on the rise and will create new opportunities

Expected to boost innovation, while rapidly evolving the labor market

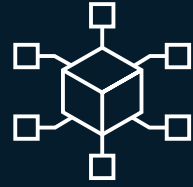
2. Technology-led disruptions are on the rise and will create new opportunities



Rising global tech spend

5.3% CAGR in 2024

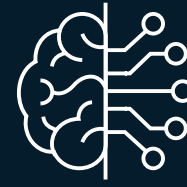
vs. 3.5% CAGR in 2023, to reach \$4.5-5 trillion in global tech spend in 2024



Rise in automation levels

>50 billion

devices will be connected to the Industrial Internet of Things by 2025



Rise in tech-related job postings

15% increase

in tech-related job postings between 2021 & 2022 when overall job postings dipped by 13%



Future of clean technologies

>75%

of global energy will be produced by renewables in 2050

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3 Geopolitical uncertainties continue to concern business leaders

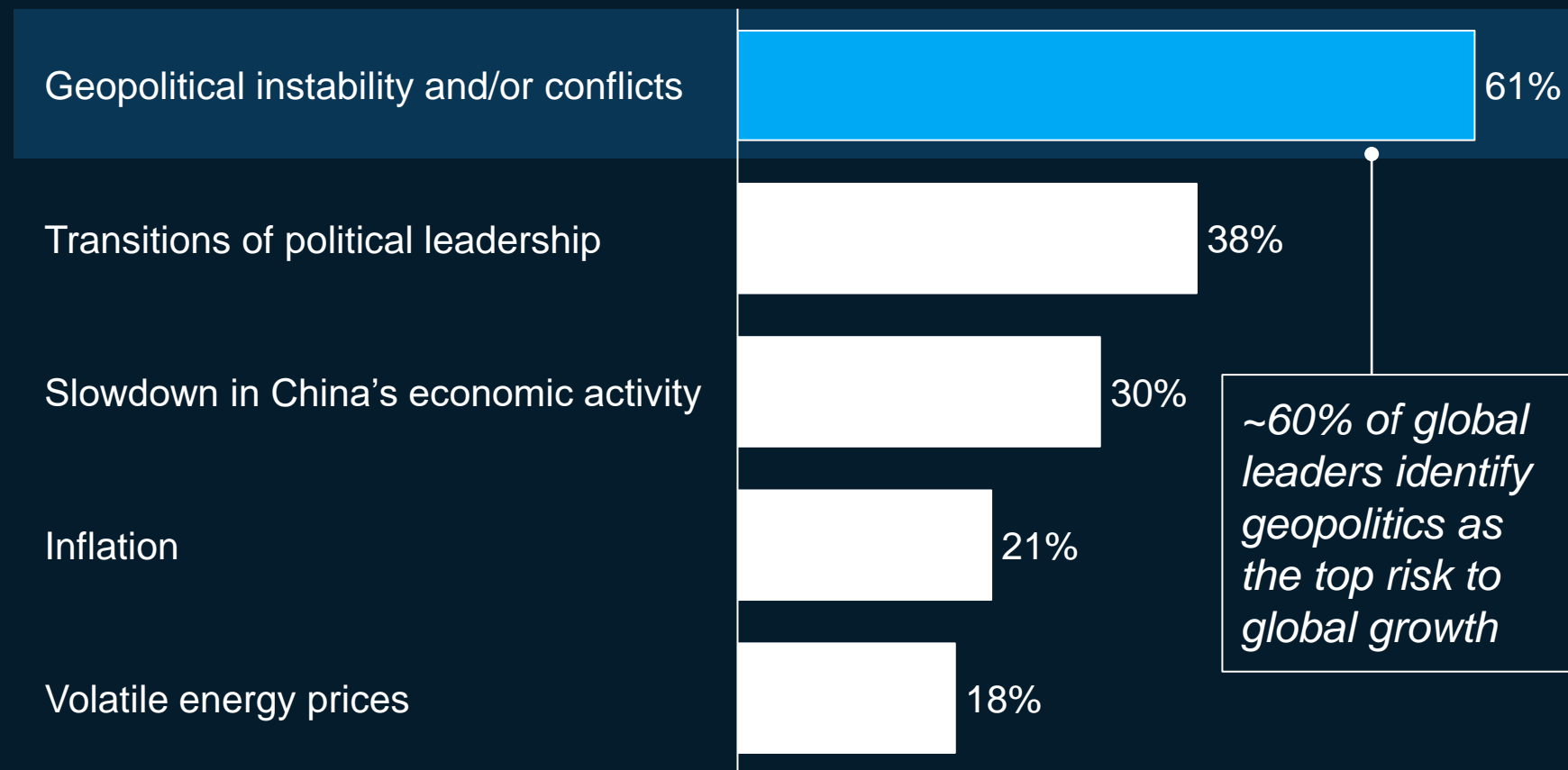
Raised as a top business risk by over 60% of 1,000+ surveyed global leaders

3. ~60% of global leaders identify geopolitical uncertainties as the top risk to global growth

We surveyed 1,000+ business leaders globally (during Dec'23-Mar'24) on potential risks impacting economic conditions



Top 5 potential risks to global economic growth, next 12 months¹, (% of respondents)



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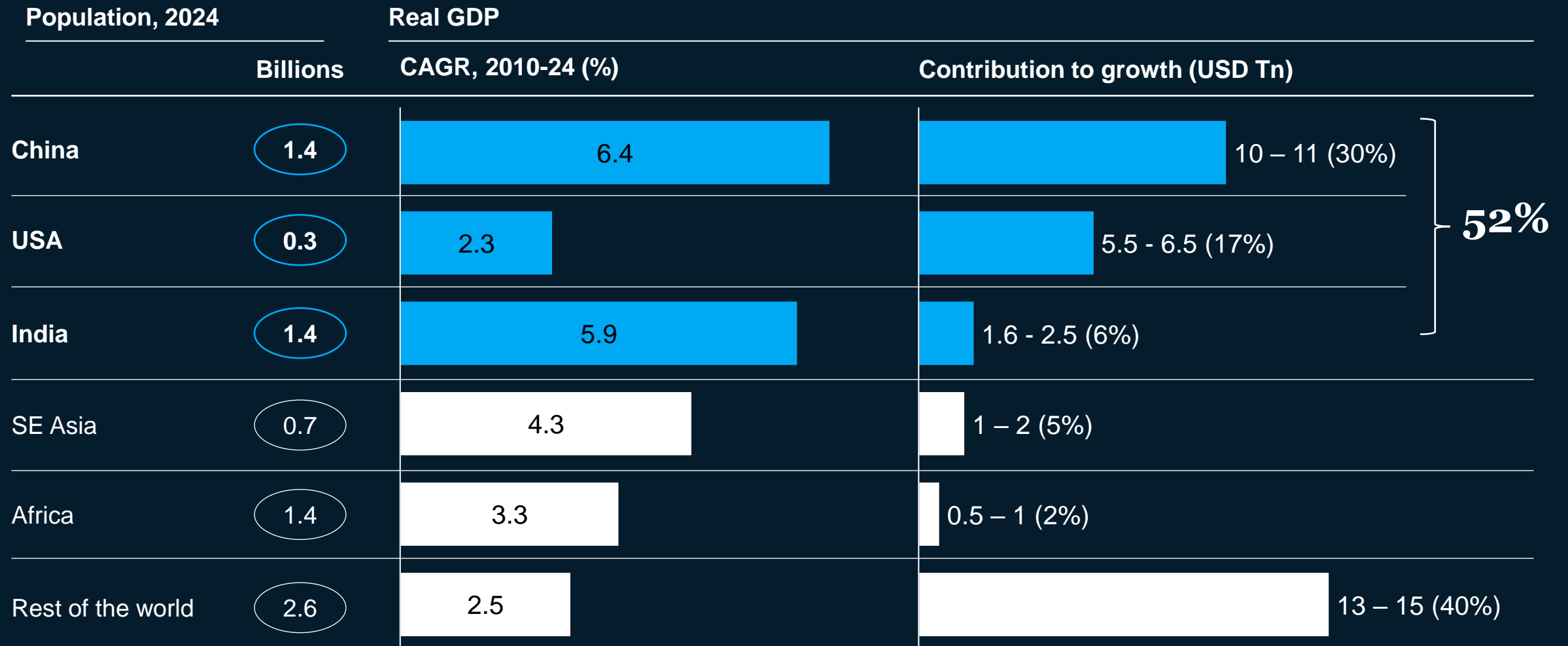
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4 Three countries drove nearly half of global GDP growth

Can boost trade, reshape global supply chains, and contribute to a more multipolar world order

4. During 2010-24, 3 countries drove nearly half of the world's GDP growth; India and China were the fastest growing economies



Major shifts are underway in the Indian economy

Infrastructure investments

\$1.3Tn infra projects announced

Innovation clusters

Unified Goods and Services Tax

Insolvency & Bankruptcy Code

Woman empowerment

20% participation of women
in labour force

\$3.1Bn directed into women and
child protection schemes

Push on banking access, affordable
energy, safe drinking water

A digital & tech backbone

Infra by govt – India stack - UPI, ONDC, frameworks

40% transactions in 2023 were digital

160Mn+ e-commerce transactions

Growth of Private Capital

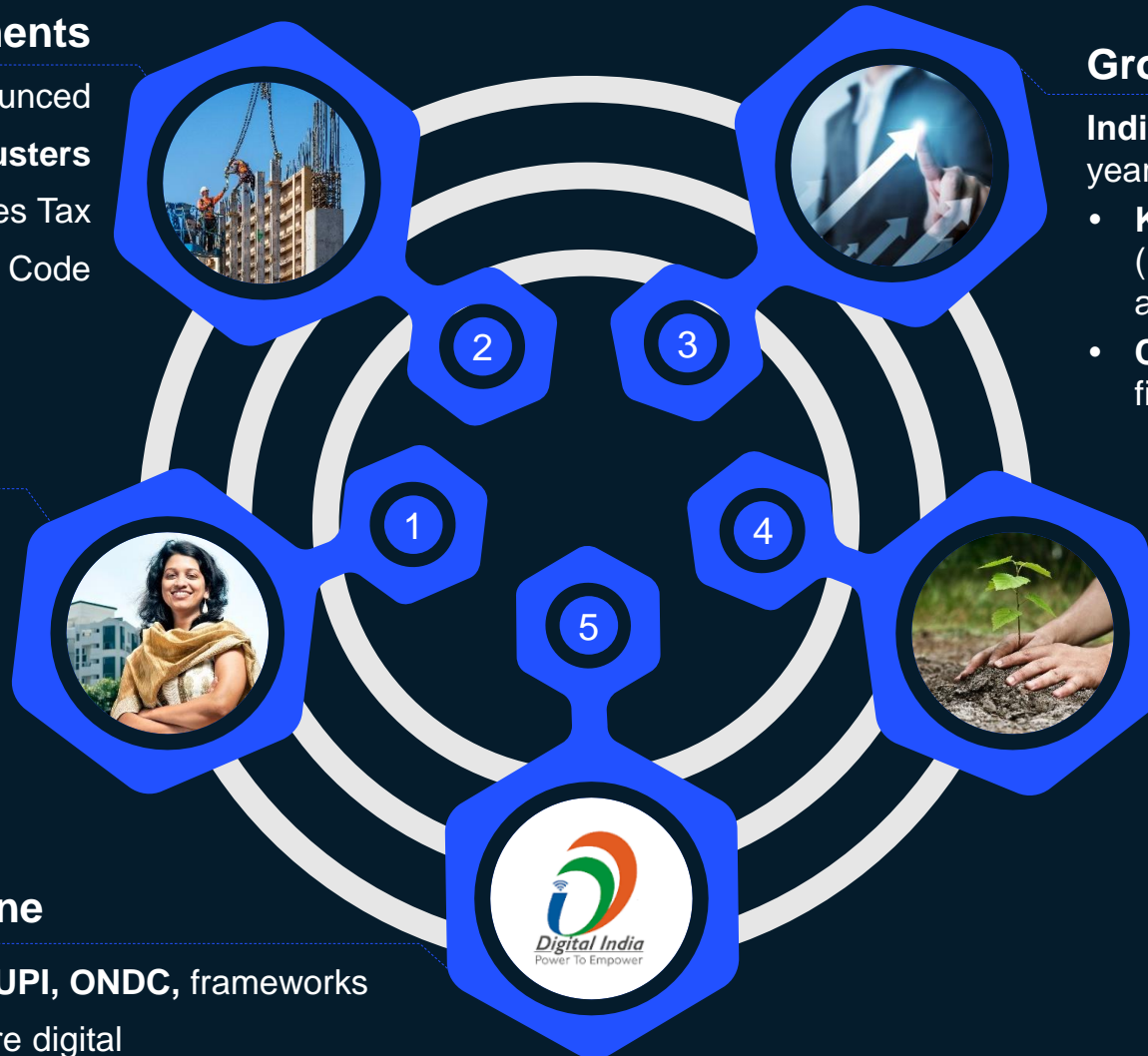
India's share is 20% of APAC; doubled in 5
years. China down from 63% to 26%

- **Key investment themes:** make from India (ITES, CDMO), financing, consumer brands, affordable housing, China plus one
- **Currently more capital than assets;** significant innovation in models for partnership

Focus on Sustainability

45% reduction target in carbon
emissions intensity of GDP by 2030

























Planning for a potential energy and
water crisis



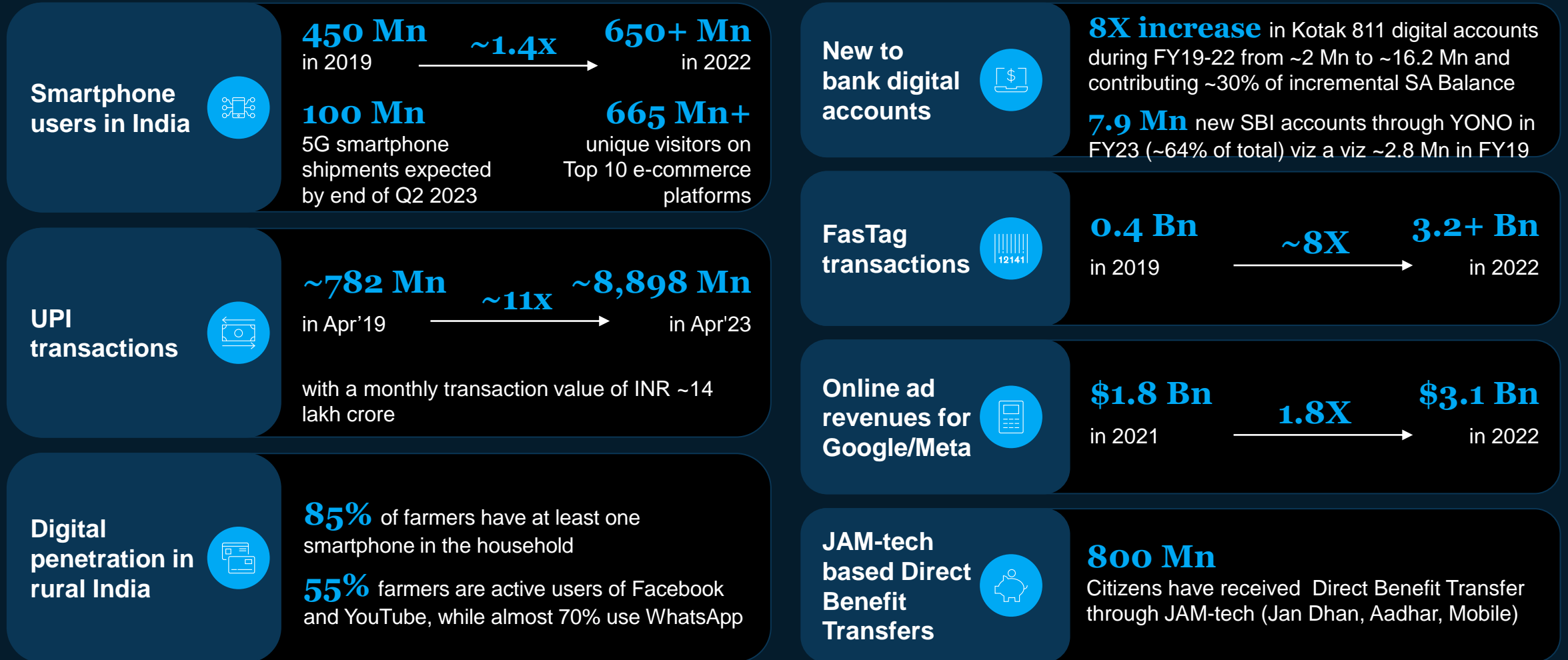
Significant digital public infra has been instituted...

Not Exhaustive

Level of maturity/usage ■ High ■ Under development/pilot stage

	 Fintech (lending, payments, portfolio mgmt., insurance)	 Agriculture	 Health	 B2B/B2C/B2G	 Logistics/Infra
Applications by govt.	<p>BHIM </p> <p>Sahay GEM </p>	<p>E-NAM </p> <p>Kisan Rath </p> <p>Kisan Suvidha </p>	<p>Co-Win </p> <p>eSanjeevani </p> <p>Aarogya Setu </p>	<p>GEM </p>	<p>Logistics planning and performance monitoring tool (LPPT)</p>
Standards/framework/protocols	<p>OCEN</p> <p>DEPA: Account Aggregators</p>	<p>Federated Farmers' Database</p> <p>Unified Farmer service interface</p> <p>Fast Agri Interoperability Resources</p>	<p>Health information exchange and consent manager</p>	<p>Open Network for Digital Commerce</p> 	<p>Unified Logistics Interface Platform (ULIP)</p>
Open utilities	<p>e-KYC </p>	<p>DigiLocker </p>	<p>e-Sign </p>	<p>Unified Payments Interface </p>	
Identification layer	<p>Aadhar authentication </p>	<p>Unique Farmer ID </p>	<p>Unique Health ID </p>	<p>Unique GSTN </p>	<p>Parivahan </p>
Foundation layer	Aadhar, Jandhan, Mobile (4G/5G)				

...leading to shifts in customer behavior and digital adoption



Taking a closer look at the Pharma industry

An industry that transforms lives and has been on an inspiring journey



Diseases cured up to

97%

impact on specific diseases

Cure rate for HEP-C therapy after a 12–24-week treatment period



Patients reached

3.5

trillion pills per year

Consumed across the globe annually



COVID-19 pandemic addressed

11

months to launch

For COVID-19 vaccines



Life Expectancy improved

~35%

of overall improvement

Effective increase of 3 years globally

India has been a significant contributor in this global journey...

Strong and established local industry...



USD 50Bn+

Size of overall Indian Pharmaceutical Industry¹



20+

Companies with USD 1+ Bn market capitalization²



1st (590+)

In number of US FDA approved plants outside US³

...making significant progress...



37% reduction

Lower per person disease burden in India (DALY, 2000-2019)⁴



60%

Global vaccine demand supplied by India (pre-covid)⁶



~3X

Increase in patents granted from 2017 to 2022⁵

...and economic contributions



~2.7 Mn

Jobs created in India⁷



USD 17.5 Bn

Contribution to Indian annual trade surplus in 2021⁷

1. IBEF Report
2. Press search – www.companiesmarketcap.com
3. Press search – [The Hindu](http://TheHindu)

4. Global Health Estimates, WHO
5. Company websites, press search – figures indicated for top-15 pharma cos
6. Indian life sciences: Vision 2030, FICCI June 2015, Growth estimated by IHS Market
7. Press Information Bureau; IDMA report

...with Operations being the backbone

Cost outcomes

Overall productivity
(Mn units/FTE, POBOS)

Rise in overall productivity globally;
India leading the way

Delivery outcomes

OTIF vs confirmed
(%, POBOS)

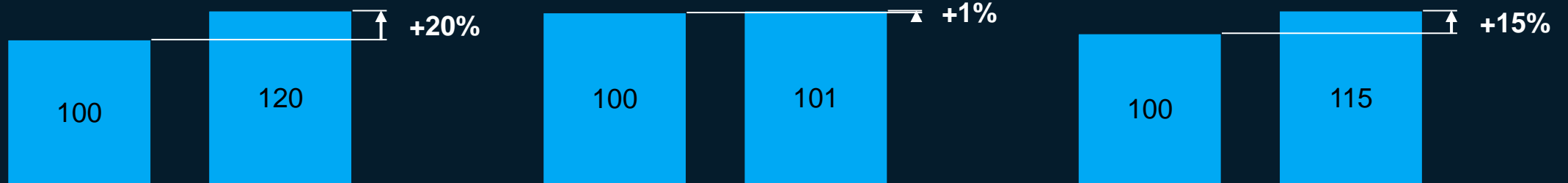
Stagnant globally, but **India showed substantial growth**

Quality outcomes

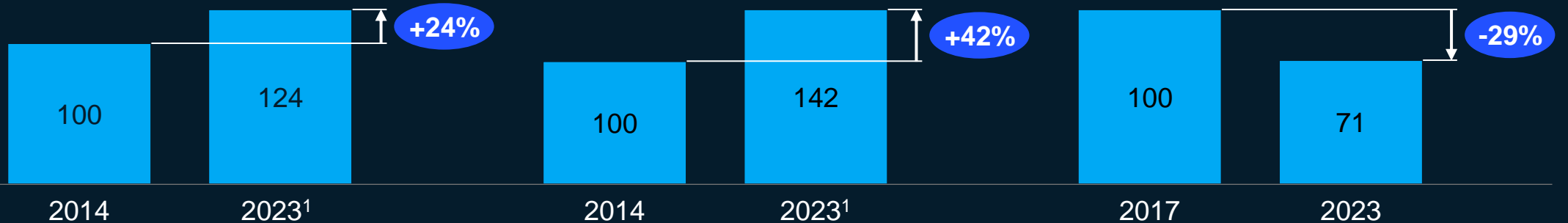
Inspections resulting in OAI's,
(%, FDA data)

Rise in OAI globally, but **reduction seen in India**

Global



India



1. Avg. of 2022 and 2023 taken for cost and delivery outcome metrics due to limited data availability for 2023

Six discontinuities that force us to relook at Operations strategy

**1**

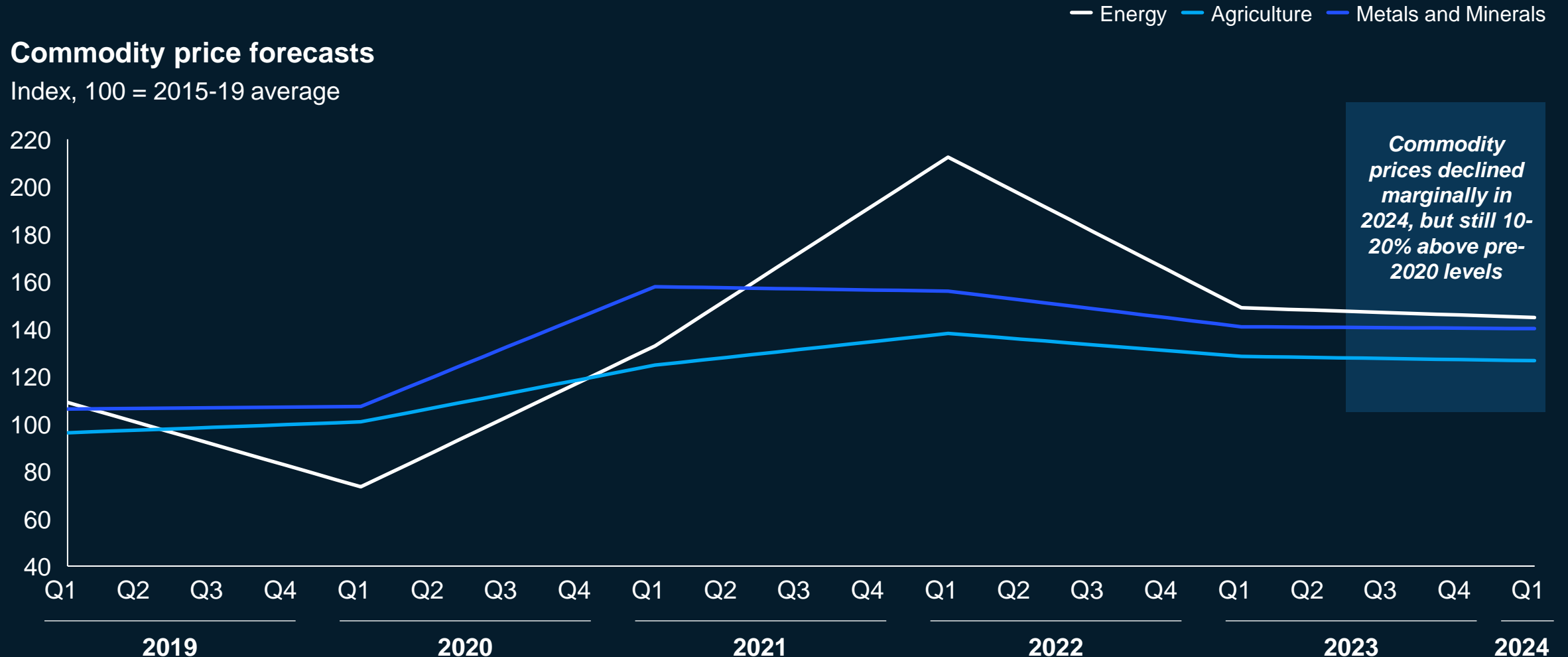
Persisting risks on margins, even as price volatility eases

Commodity prices rose in 2020-22, but despite a 2024 decline, continue to be 10-20% higher than 2020 levels

1. Persisting risks on margins: Commodity prices have been volatile over last 3-4 years; continue to remain above pre-2020 levels

Commodity price forecasts

Index, 100 = 2015-19 average



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Supply chain disruptions, amid rising complexities

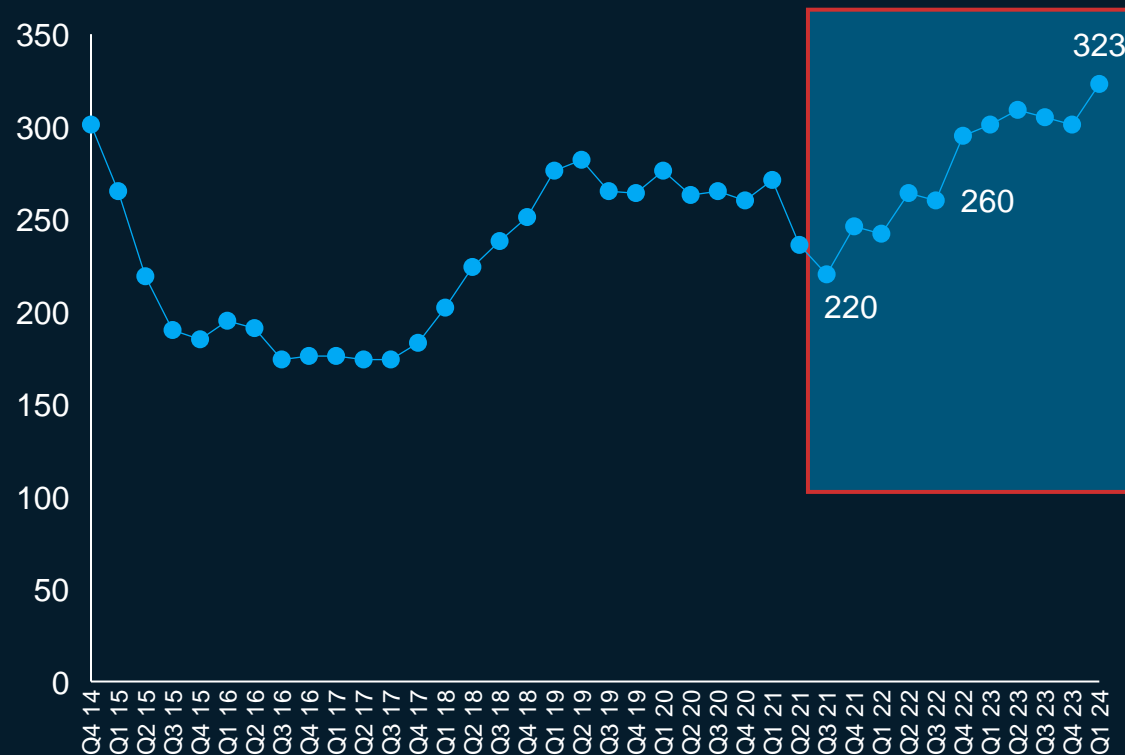
Structural factors limit ability to navigate discontinuities; drug shortages in US/Germany at decade-long high

2. Supply chain disruptions: Drug shortages in US and Germany are now at a decade long high

Periods of steep rise in drug shortage

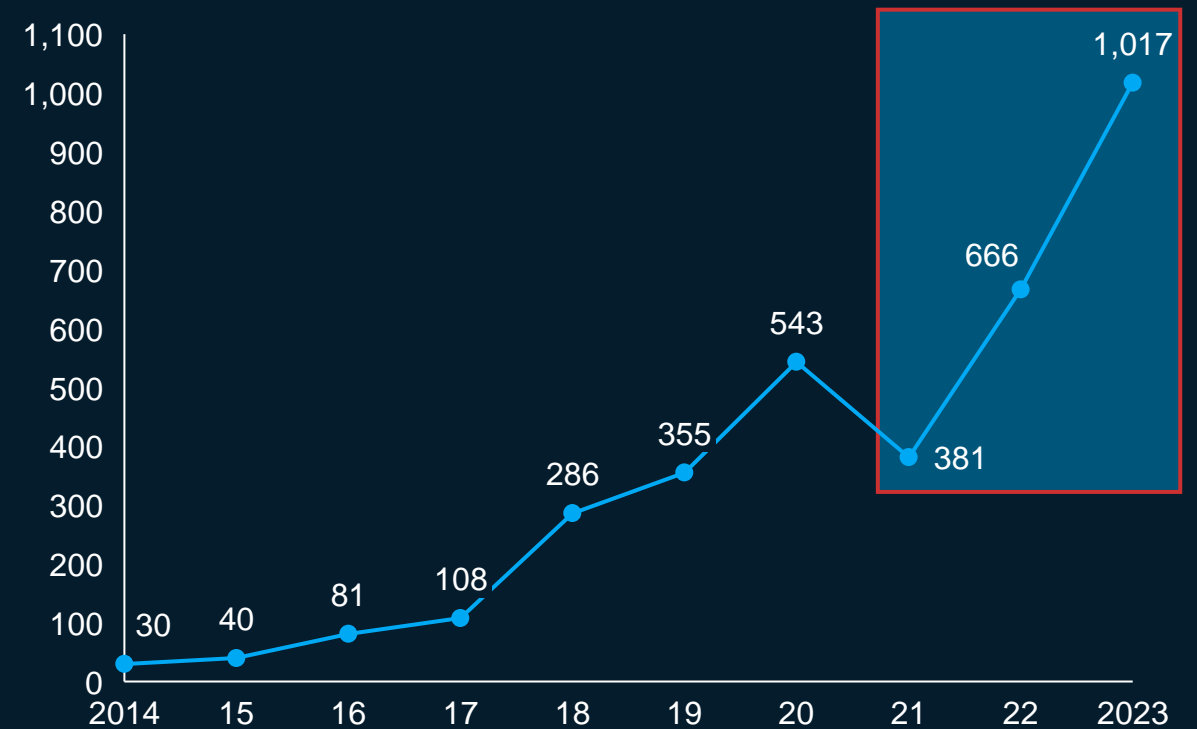
U.S Active Drug Shortages by Quarter (per ASHP)

Number of active shortages at the end of each quarter



Reported drug shortages in Germany

Number of drugs that were short



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'Job' reinvention and skill shortages

Shift from traditional to new-age skills due to digital/AI disruptions and rise of new modalities

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Value-capture from digital tech continues to be limited

Focus continues to be on use-case-based "point solutions", with limited at-scale ("digitally-native") adoption

4. Limited value capture from digital: Data integration capabilities and talent availability limit the potential of pharma companies

 Top reasons for limited digital tech adoption

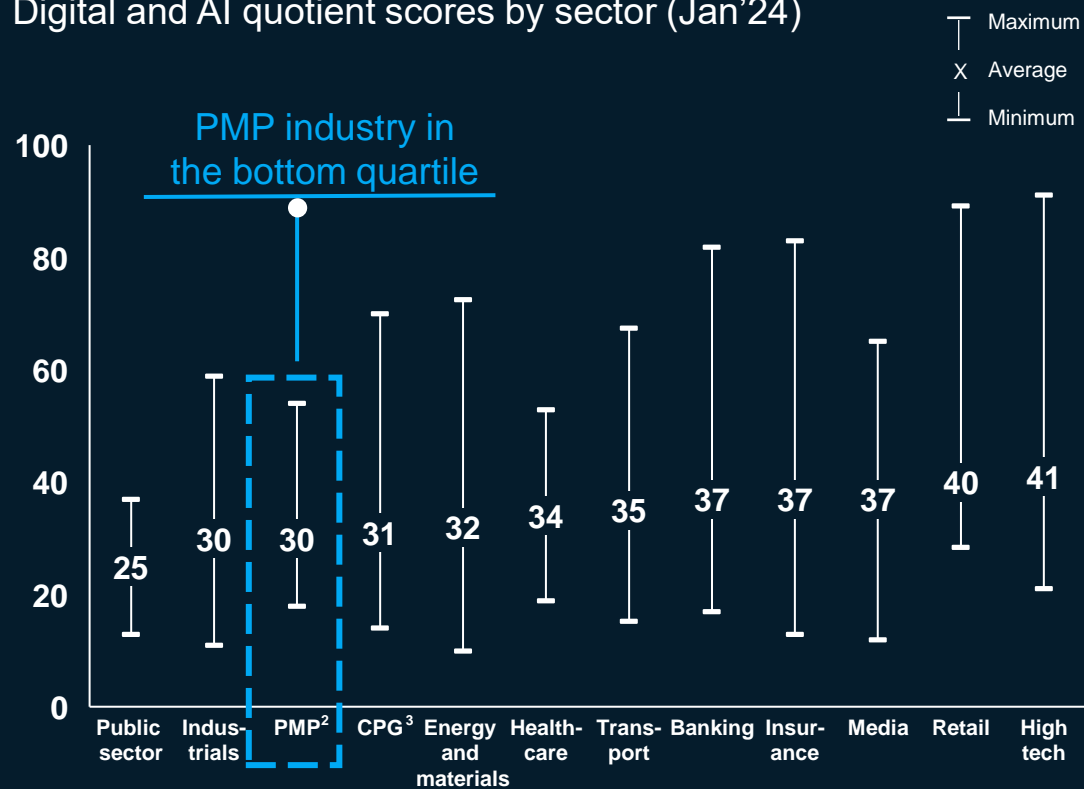
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A digital maturity gap exists in the life sciences industry...

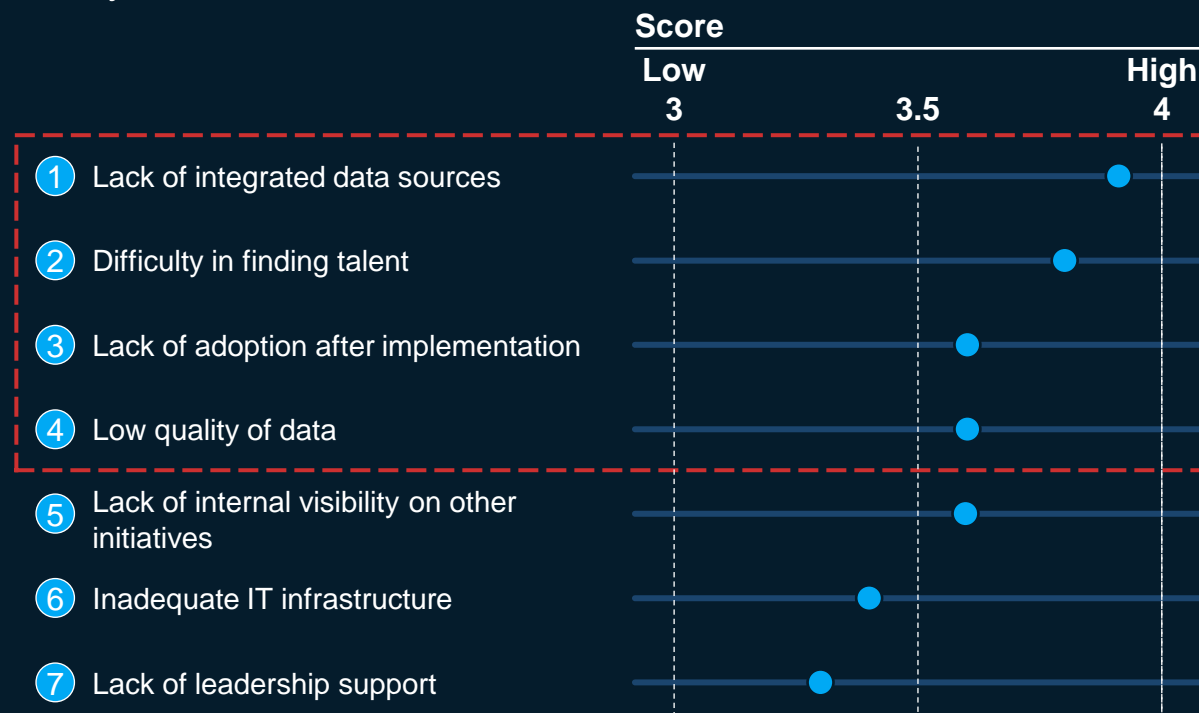


...majorly due to lack of high-quality data sources and digital talent availability

Digital and AI quotient scores by sector (Jan'24)



Hurdles to scaling digital and analytics in healthcare (scores 1 to 5), survey of 100 DnA leaders in life sciences, Nov' 22



Source: McKinsey Global Institute

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Emergence of a new paradigm of quality excellence

Shift from focusing on process compliance and trained workforce to E2E error-proofing in ways of working

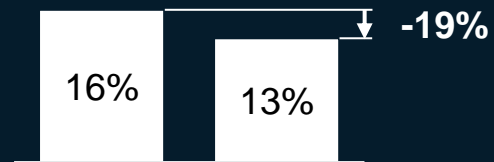
5. New paradigm of quality excellence: While industry has improved on several quality-critical areas, there is a lot more to be done

Analysis of OAI & WL observations by topic / theme between 2018-2022

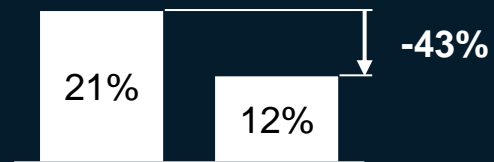
Share of observations on 2 areas saw a decline between 2018-23 ...

Top 3 areas that have reduced in share of 483 observations cited by USFDA in OAI/ WLs

Essential cGMP training / capabilities; e.g., lack of training and expertise required to perform assigned functions



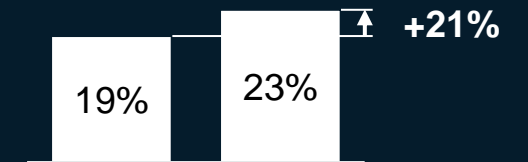
Lab controls and core manufacturing processes; e.g., established accuracy, specificity, and reproducibility of test methods



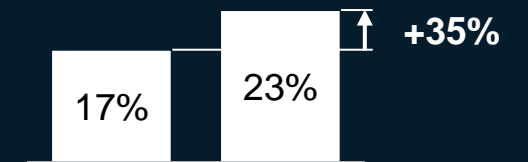
... while 3 areas saw an increase in share of observations

Top 3 areas that have increased in share of 483 observations cited by USFDA in OAI/ WLs

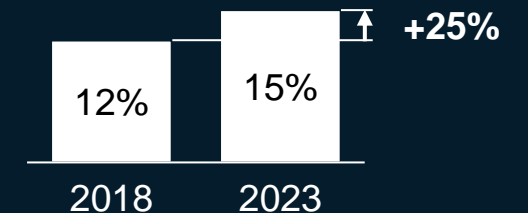
Gaps in practices vs. written procedures; e.g. aseptic practices, contamination, unavailability of written procedures



Facilities and ancillary infrastructure; e.g., gaps in maintenance of facility to ensure sanitary conditions



Investigations and RCA; e.g., Failure to thoroughly review any unexplained discrepancy



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5 Emergence of a new paradigm of quality excellence

Shift from focusing on process compliance and trained workforce to E2E error-proofing in ways of working



6 Approach towards ESG commitment - "leader" or "fast follower"

Choice of a defensive or an offensive leader strategy by the industry to achieve the 1.5°C global pathway

6. Approach to ESG: When done well, ESG will create long-term competitiveness, unlock economic value, and improve social outcomes



Capturing new growth

2-5%
additional growth¹



Reducing costs

5-10%
cost reduction¹



Managing risk and cost of capital

20-60%
of EBITDA at stake¹



Enhancing investor perceptions

15%
annual growth in ESG assets (>30% of total market)²

Other improved outcomes (not exhaustive)



Increasing employee productivity



Expanding access to medicines



Reducing environmental impact

1. Typical ranges based on assessment of ESG and financial performance and expert interviews | 2. Based on McKinsey Performance Lens Global Growth Cube: Denominator with AM industry AuM plus institutional directly managed AuM; >30% of total market number is GSIA view

Source: "More than a mission statement: How the 5Ps embed purpose to deliver value", McKinsey (November 2020); McKinsey analysis

Five future priorities for Pharma Cos. to consider

1

Expand focus from basic compliance to 'Holistic Quality Excellence'



Proactively error-proof operations (i.e., via lean, AI, automation) to minimize errors



Invest in next-gen technologies to aid higher-quality issue-resolution; i.e., AI led product robustness, Gen AI assisted CAPAs

2

'Set up for Scale' to streamline Digital / AI / GenAI adoption in the organization



Build resilience in tech architectures i.e., 'future-proof' for business needs, tech disruptions



Setup a unifying & integrated 'core tech' platform that is innovative, scalable, and interoperable across all systems & apps

3

Build Supply Chain resilience through organization-wide agility



Augment core supply chain & planning to build structural supply resilience, e.g. via

- AI-led integrated and dynamic planning
- N-3 tier supply dependencies
- Optimized AI-led logistics models

4

Set a clear vision for Environmental Sustainability and link to business goals



Set a bold 2 year 'Dual-mission' for your procurement organizations –

- 10% cost optimization / efficiency improvement
- 30% carbon (Scope 3) reduction

5

Build Talent Infrastructure for the future, to foster future-ready capabilities



Set up technology-enabled capability-building (learning on-the-go, AI-assistants), and closely link skilling to demonstrated business outcomes



Rewire organization to new-age structures that are 10% leaner, 30% faster, and 10-20% higher performing

Strategic performance drivers

Critical enablers