

The recovery contours

India Outlook

Fiscal 2023

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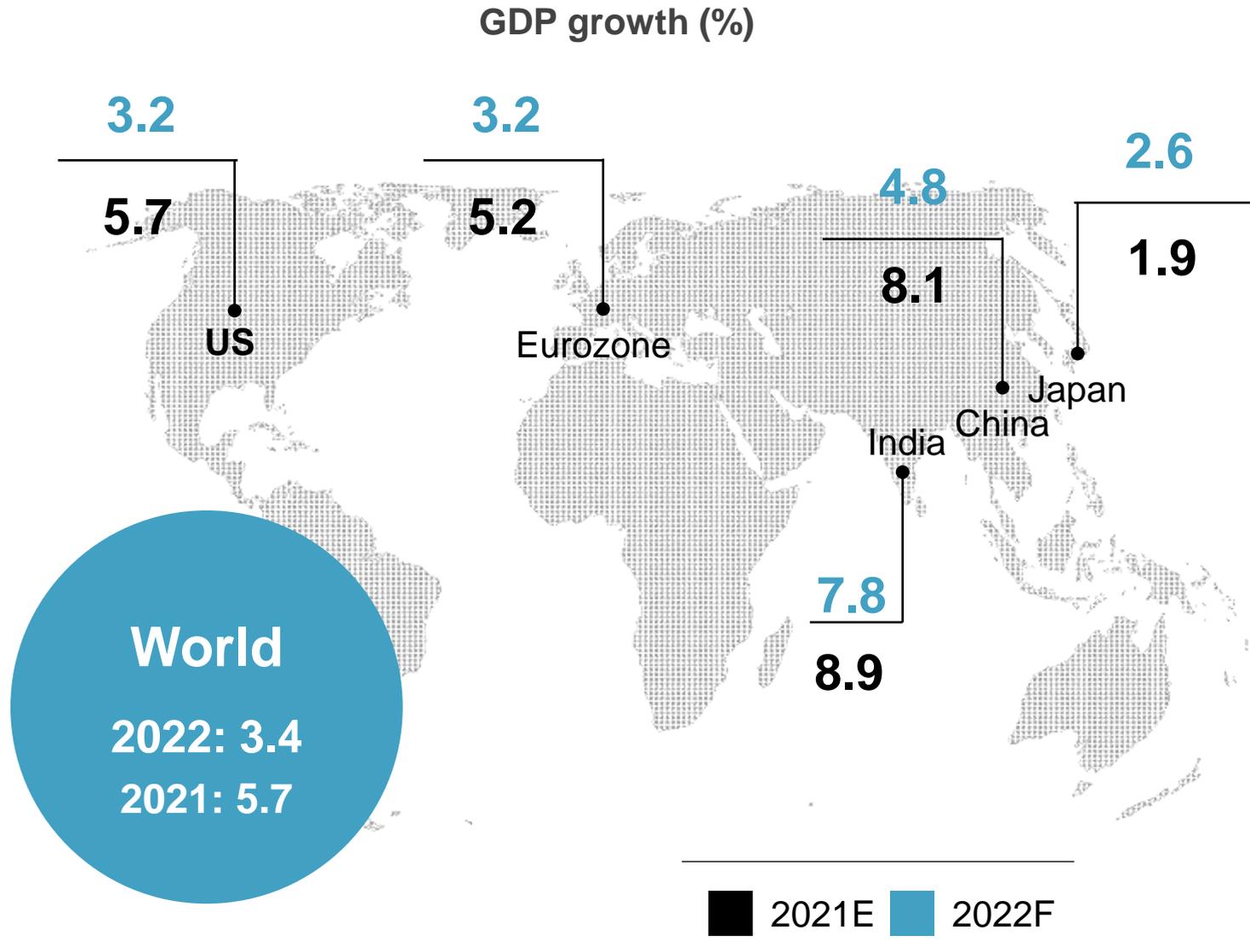
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Challenges under the hood

- **GDP growth projected at 7.8% next fiscal, with risks tilted to the downside**
 - Hinges on infrastructure-led capex by government and stirring of private capital expenditure (capex)
 - Private consumption remains the weak link owing to reduced direct fiscal policy support
- **Upside to inflation likely to crimp monetary policy space**
 - Inflation based on the Consumer Price Index (CPI) is expected to average 5.4% next fiscal
 - Repo rate to rise 50-75 basis points (bps) next fiscal
 - Benchmark 10-year government security (G-sec) yield seen rising to 7.1% by March 2023 – with an upside bias – given the turning monetary policy cycle, high crude oil prices, and large borrowings by the government
- **Risks multiplying, though India is on firmer ground**
 - Risks are shifting fast from Covid-19 to geopolitics, crude oil, and interest rate hikes in the US
 - Our macroeconomic outlook is predicated on an average Brent crude price of \$85-90 per barrel (bbl) in fiscal 2023. If it stays higher, it will create risks to our growth, inflation and current account calls
 - Surprises in the US Federal Reserve's (Fed) rate-hike schedule could create volatility in the forex markets
 - Also, Covid-19 infection rates are down, but the pandemic has not been officially eradicated. So, the possibility of disruption of economic activity due to further waves of infections cannot be ruled out
 - India is better prepared than in 2013 to face external shocks due to its forex shield, but it is clearly not insulated

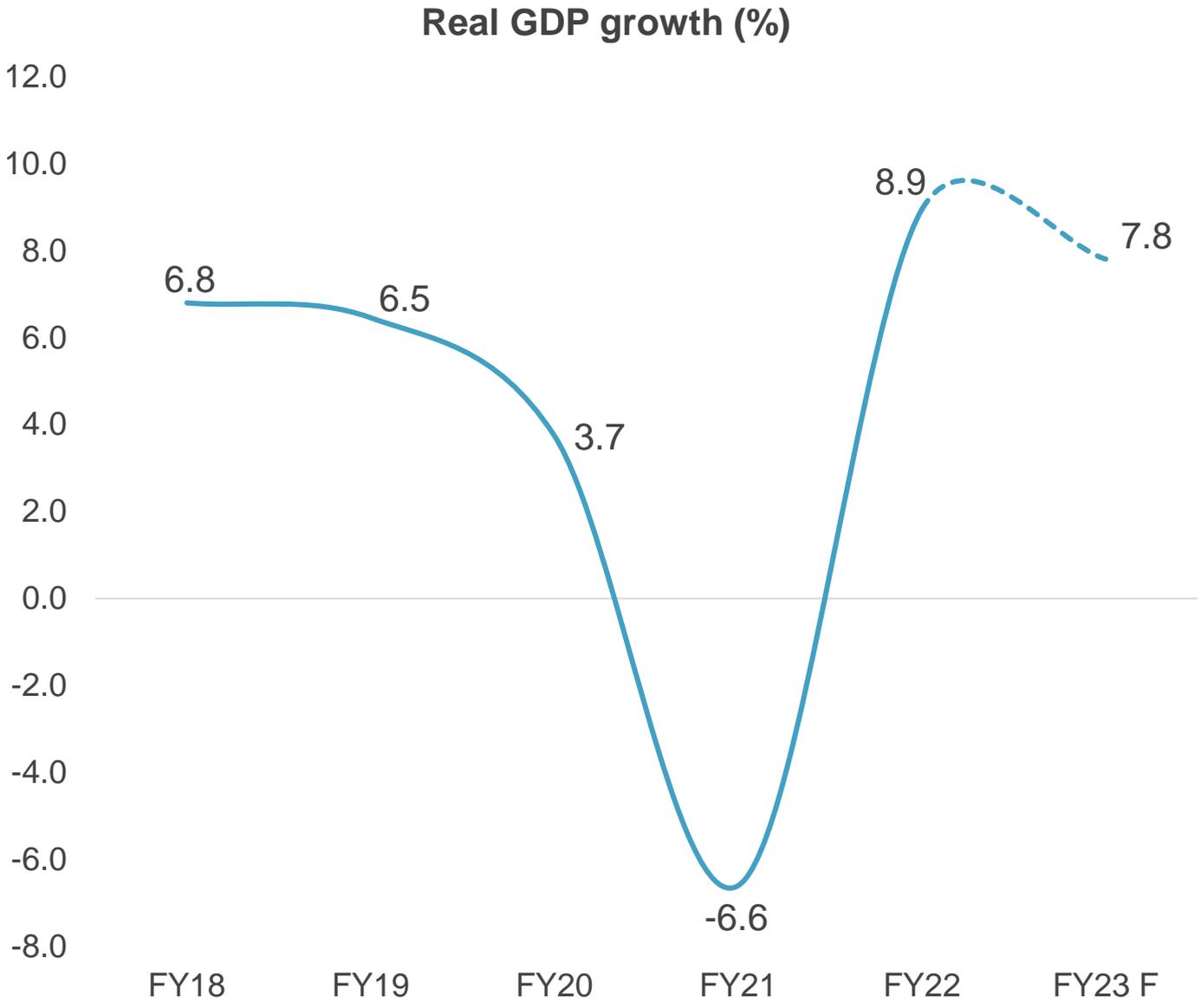
Global growth to moderate amid rising risks



- Global growth expected to slow amid the Russia-Ukraine strife. Europe to be hit the hardest
- Effect of rising energy prices is a spike in inflation in the near term
- Economic impact of Covid-19 has reduced; uneven recovery seen across AEs and EMs
- Actions of the Fed will put pressure on EM central banks to raise policy rates

E: Estimated; F: Forecast; AEs: Advanced economies; EMs: Emerging markets
 Source: S&P Global (February 2022); India outlook is for fiscal year

CRISIL's outlook for next fiscal



F: Forecast; PLI: Production Linked Incentive scheme
Source: National Statistical Office (NSO), CRISIL

Growth number predicated on

- Broad-basing of economic activity and contact-based services to start contributing more to growth, as Covid-19 is expected to enter endemic stage
- Support by public investment; the PLI scheme also expected to generate private capex in pockets
- A normal monsoon for the fourth year in a row

But risks are multiplying

- Slowing economies worldwide
- Headwinds from the Russia-Ukraine war; higher commodity prices, especially crude oil

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Government's strategy for growth



Issues

- Create fiscal space to support the economy as recovery is nascent and uneven
- Help vulnerable segments hit by the pandemic
- Raise medium-term growth potential of the economy



Fiscal stance

- The Union Budget for next fiscal has focused primarily on infrastructure investment-led growth, and has limited direct consumption push
- Rationale is, investment-led growth will lift all boats

Capex revival hinges on government support

Sr no	Capex (Rs lakh crore)	FY18	FY19	FY20	FY21	FY22 BE	FY22 RE	FY23 BE
1	Budgetary capex	2.63	3.08	3.36	4.26	5.54	6.03	7.50
2	Grants for creation of capital assets	1.91	1.92	1.86	2.31	2.19	2.38	3.18
3	Capex by CPSE (IEBR)	6.11	6.08	6.42	4.78	5.83	5.02	4.69
4	Effective capex (1+2)	4.54	4.99	5.21	6.57	7.73	8.40	10.68
5	Capex by budget and CPSE (1+3)	8.74	9.16	9.77	9.04	11.37	11.05	12.20
6	Grand total capex (1+2+3)	10.65	11.07	11.63	11.35	13.56	13.43	15.37
Sr no	Percentage of GDP	FY18	FY19	FY20	FY21	FY22 BE	FY22 RE	FY23 BE
1	Budgetary capex	1.54	1.63	1.67	2.15	2.39	2.60	2.91
2	Grants for creation of capital assets	1.12	1.01	0.92	1.17	0.94	1.02	1.23
3	Capex by CPSE (IEBR)	3.57	3.22	3.20	2.41	2.51	2.16	1.82
4	Effective capex (1+2)	2.66	2.64	2.60	3.32	3.33	3.62	4.14
5	Capex by budget and CPSE (1+3)	5.11	4.84	4.87	4.57	4.90	4.76	4.73
6	Grand total capex (1+2+3)	6.23	5.86	5.79	5.73	5.84	5.78	5.96

BE: Budget estimate; RE: Revised estimate; CPSE: Central public sector enterprises

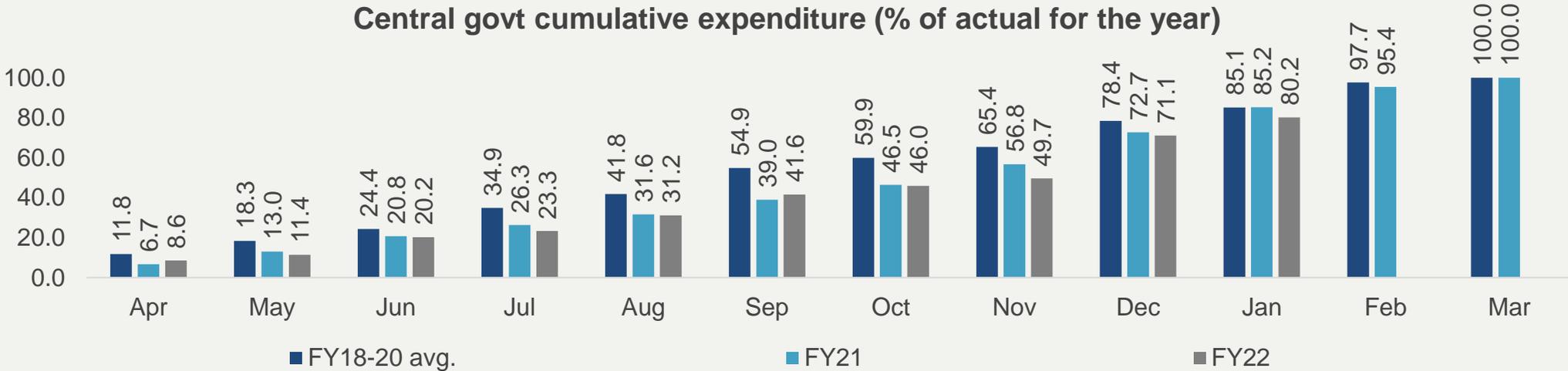
Source: Budget documents, NSO, CRISIL

- Government's capex is budgeted to go up as a percentage of GDP
- Capex pick-up is from increased budgetary outlay and support to states*; contribution of CPSEs is declining
- Centre's capex is only about one-third of total government investment

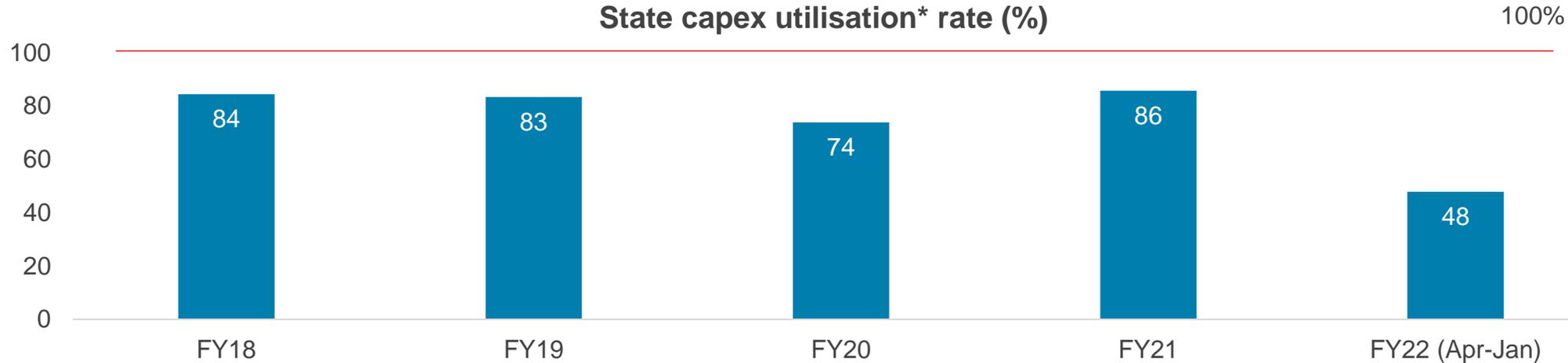
*Loans for capex to states in fiscal 2023 are budgeted at Rs 1 lakh crore, sharply up from Rs 15,000 crore in fiscal 2022 (RE)

Investment pick-up hinges on front-loading and better execution

Centre
Needs to
front-load
spending



States
Lagging
in capex



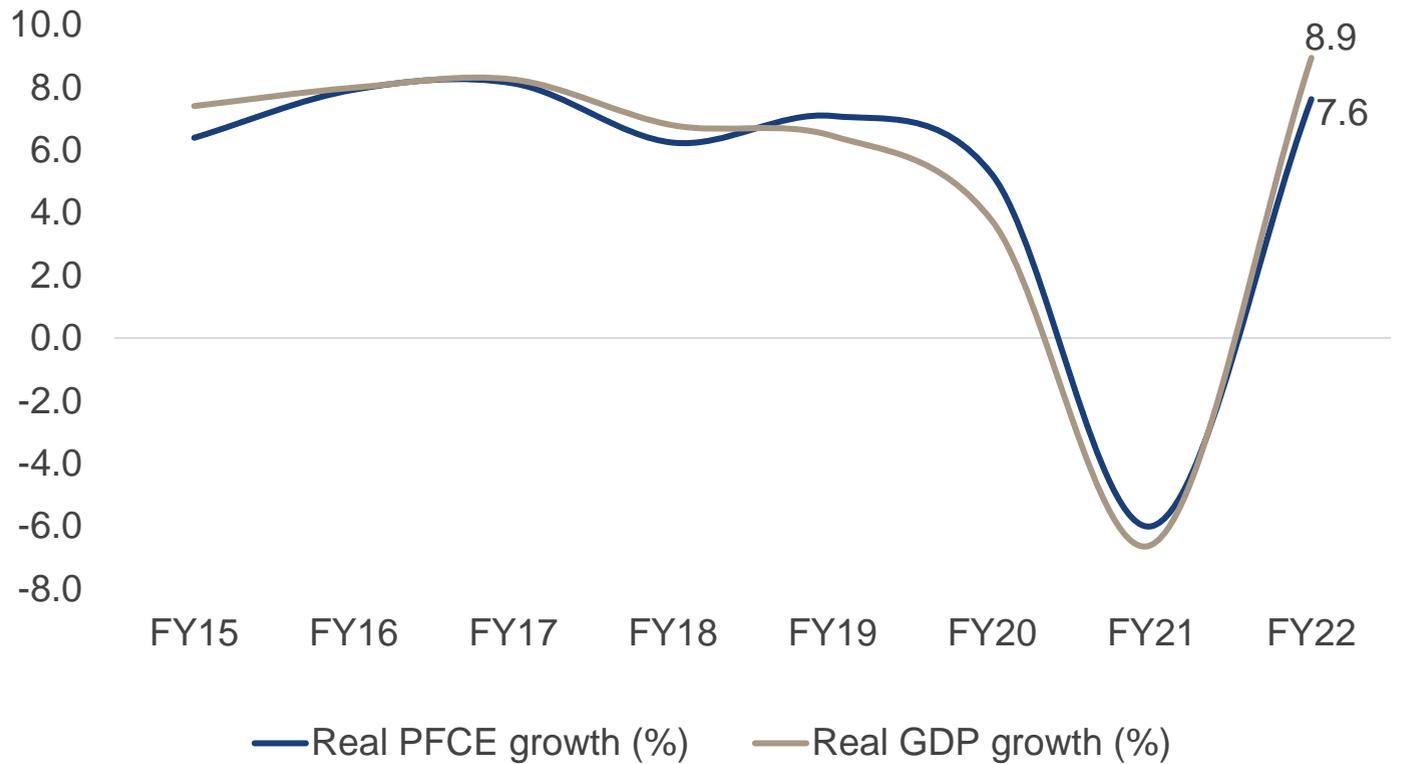
Private
companies
Getting ready

- Primed for investments, but cautious in a highly uncertain environment
- PLI scheme providing support (more on this in the industry research section ahead)
- Crowding in impact of public investment

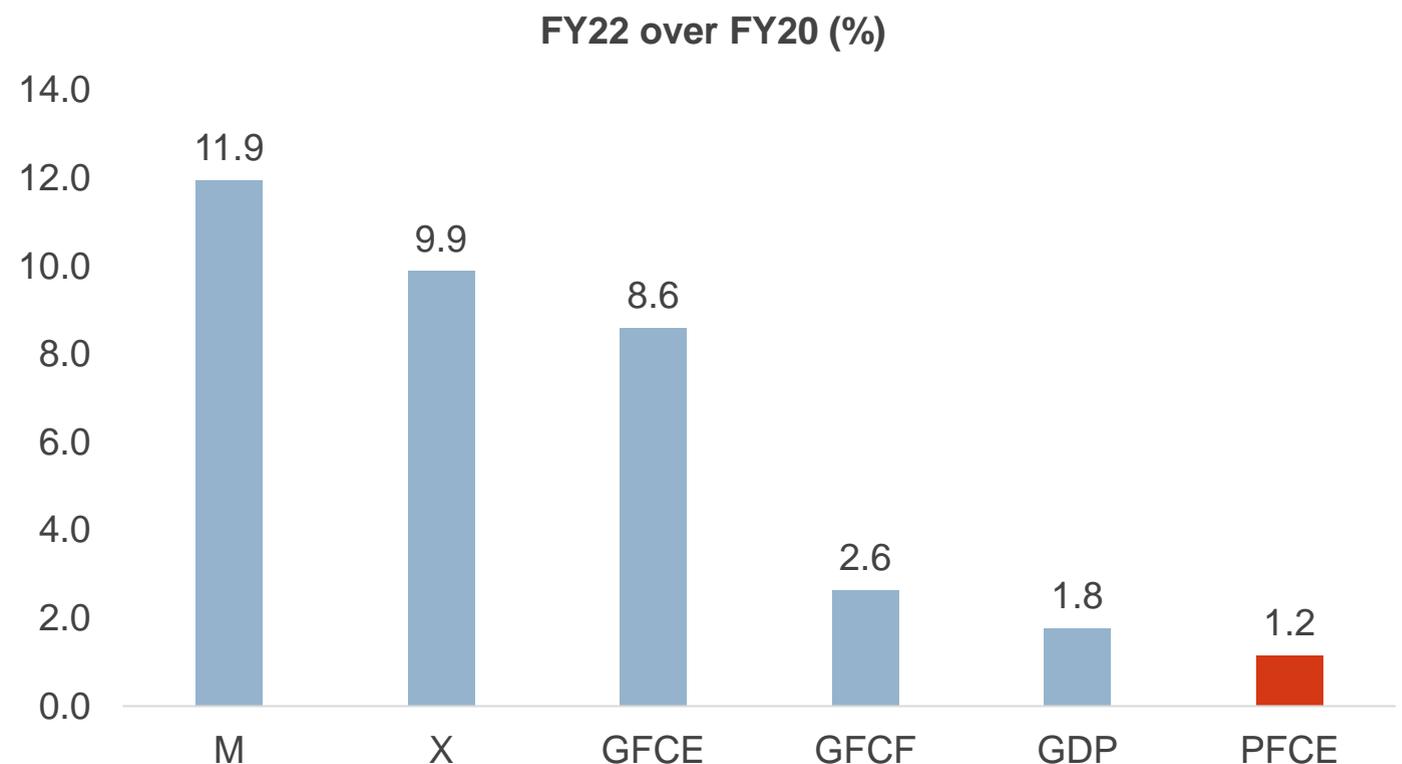
*Utilisation rate refers to ratio of actual to budgeted spending
Source: Budget documents, RBI State finances study, CEIC, CRISIL

Private consumption weak link in the demand story

PFCE growth trailing GDP growth



Private consumption a laggard

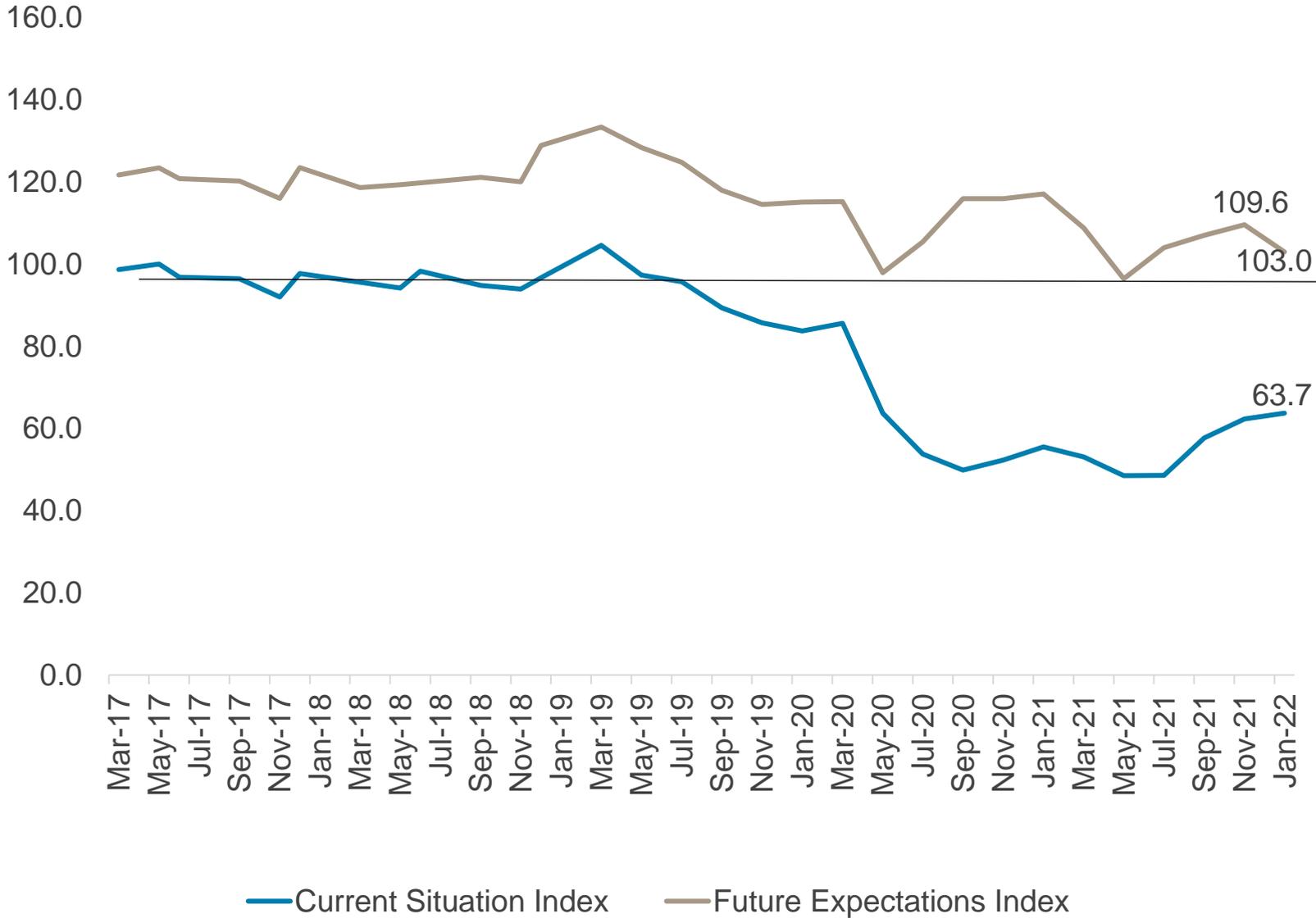


PFCE: Private final consumption expenditure; M: Imports; X: Exports; GFCE: Government final consumption expenditure; GFCF: Gross fixed capital formation
 Source: National Statistical Office, CRISIL

- Economy is 1.8% above the pre-pandemic level (fiscal 2020) in the current fiscal
- While other demand-side drivers have recovered rapidly, private consumption expenditure growth is still subdued

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Why is private consumption weak?



Tepid consumer sentiment

- The Reserve Bank of India’s (RBI) consumer confidence survey for the current period gives pessimistic vibes
- While one-year ahead outlook was in the optimistic zone, the third Covid-19 wave has again led to some moderation
- MSMEs and smaller companies, which are labour-intensive, have been hit harder by the pandemic and have been slower to recover
- High inflation continues to create headwinds; urban poor hit harder (*more about this in the inflation segment*)

MSMEs: Micro, small and medium enterprises
Source: RBI

What lies ahead for private consumption?



Positives

- If Covid-19 lies low, contact-based services, which have been hit the hardest and are still 10.9% below the pre-pandemic level, will rebound and provide support to people associated with these. This holds particularly for urban areas as two-thirds of contact-based services are urban centric
- Normal monsoon will provide support to rural demand



Why is policy support still needed?

- Amid reduced direct fiscal support, infrastructure investment-led growth will gradually filter to smaller companies and lower income categories and, consequently, have a mild positive impact on private consumption in the near term
- Although private consumption will receive some support from normalisation of activity in the coming fiscal, we believe fiscal policy may need to be deployed more aggressively than envisaged in the Union Budget. This can be done via increasing allocation for employment generating schemes, providing subsidy on food, and cutting duties on petroleum products
- This will create a bridge for those impacted the most by the pandemic till positive spillover effects of investment-led growth play out in the labour market and private consumption demand becomes self-sustaining

Inflation an elevated risk

We expect CPI inflation to average 5.4% next fiscal

- **Food grain inflation** to be contained on expectation of normal monsoon
- **Fuel inflation** to moderate over a high base amid lower on-year excise duty. Brent crude assumed to average \$85-90/bbl next fiscal, compared with ~\$79/bbl in fiscal 2022
- **Core inflation** to remain sticky at ~6%. Companies are expected to pass on increased cost pressures to retail prices to a greater extent next fiscal, as demand strengthens and becomes more broad-based

Upside risks will build from prolonged geopolitical strife

- **Crude oil prices** sustaining above \$90/bbl next fiscal will offset excise duty cuts and lead to higher fuel inflation
- **Core inflation** could face more pressure from rising international prices of metals and shipping
- **Food inflation** faces upside risks from surging international prices of edible oils and fertilisers
- Weakening rupee pushes up imported inflation

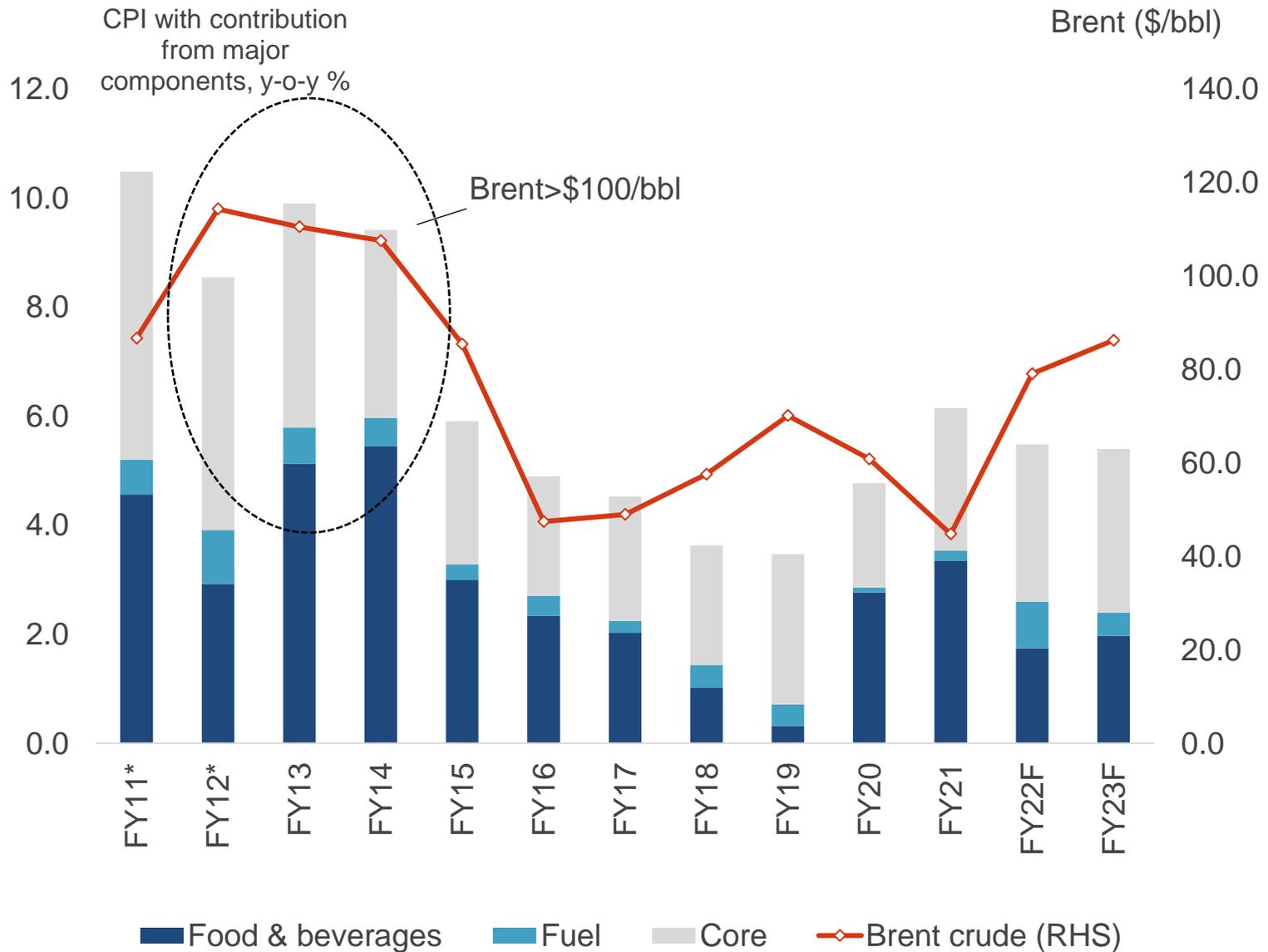
CPI inflation (y-o-y %)



Note: F refers to CRISIL's forecast
Source: NSO, CEIC, CRISIL

How will crude oil prices influence inflation next fiscal?

Crude oil prices and CPI inflation



Upside under different crude oil price scenarios (with full pass-through to retail prices)

CRISIL Research estimate of average CPI inflation next fiscal:

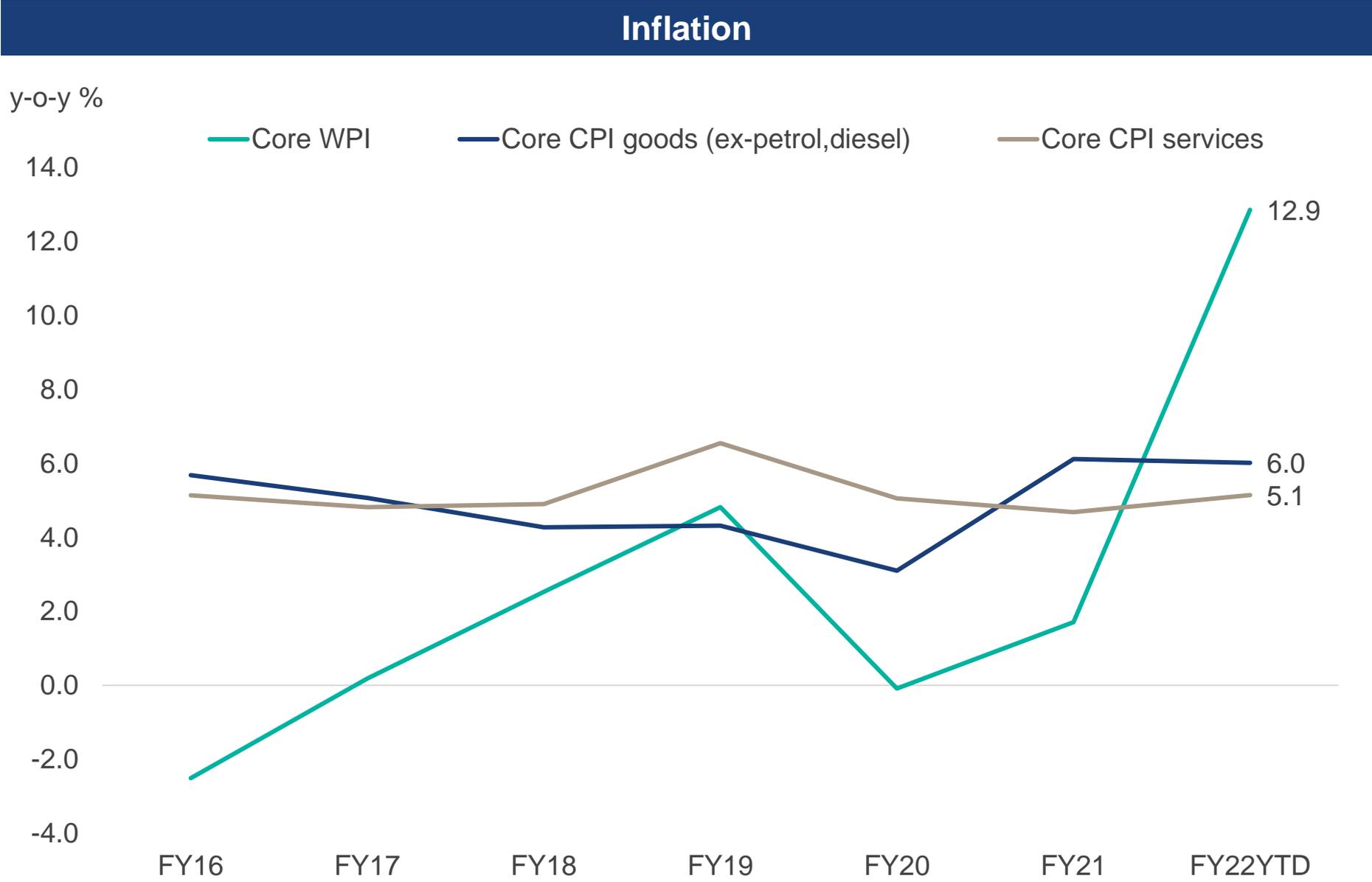
- 5.4% if crude averages \$85-90/bbl (base case)
- 5.8% if crude averages \$100/bbl
- 6.1% if crude averages \$110/bbl
- 6.4% if crude averages \$120/bbl

How different is this from the previous spike?

- The price of Brent crude topped \$100/bbl between fiscals 2012 and 2014, when food and core inflation were already high. At that point, CPI inflation was in the 8-10% range
- This time, inflation is likely to be lower because of lower core and food inflation, which together have 86% weight in the CPI

*Data for CPI Industrial Workers
 Note: Data on CPI components refer to their contribution to inflation; F refers to CRISIL's forecasts
 Source: NSO, CEIC, CRISIL

Core inflation to remain sticky



Note: FY22YTD refers to average inflation for April 2021-January 2022
 Source: NSO, CEIC, CRISIL

- Inflation based on core wholesale price index (WPI) was much higher than CPI in the current fiscal
- Firms were unable to fully pass on the cost due to weak demand; pass-through weaker for services than for goods
- Firms should be able to pass on cost pressures next fiscal, as demand strengthens and becomes broad-based. Services inflation is also likely to catch up

Inflation hurt the urban poor the most

- The burden of inflation on different income groups varies based on the proportion of spending on food, fuel and core categories
- Using the National Sample Survey Organisation (NSSO) data, we estimated the average expenditure patterns across three broad income groups (bottom 20%, middle 60% and upper 20% of the population) and mapped them with the inflation trends
- We found that the urban poor faced maximum inflation in the past two years
- Food and fuel have the highest weight in the consumption basket of the poor. The urban poor faced double-digit fuel inflation and higher food inflation than their rural counterparts

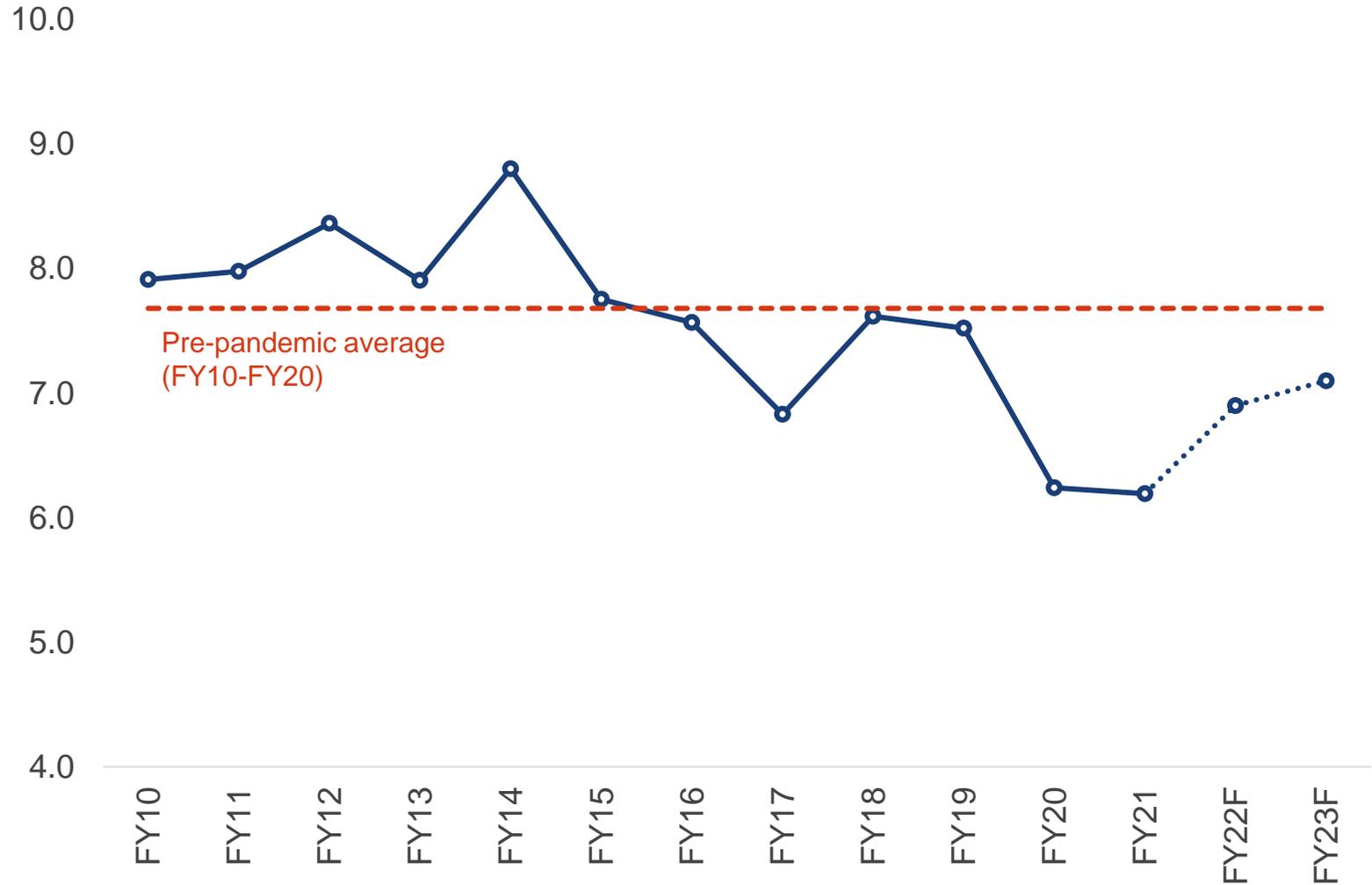
CPI inflation across income groups

	Rural				Urban		
	Bottom 20%	Middle 60%	Upper 20%		Bottom 20%	Middle 60%	Upper 20%
FY22YTD	5.0	5.1	5.3	FY22YTD	5.7	5.6	5.5
FY21	5.9	6.0	5.9	FY21	7.0	6.8	6.4
FY16-FY20	4.2	4.2	4.4	FY16-FY20	4.0	4.1	4.2

Note: FY22YTD refers to average inflation for April 2021-January 2022
 Source: NSO, NSSO, CEIC, CRISIL

Yields to rise from compressed levels

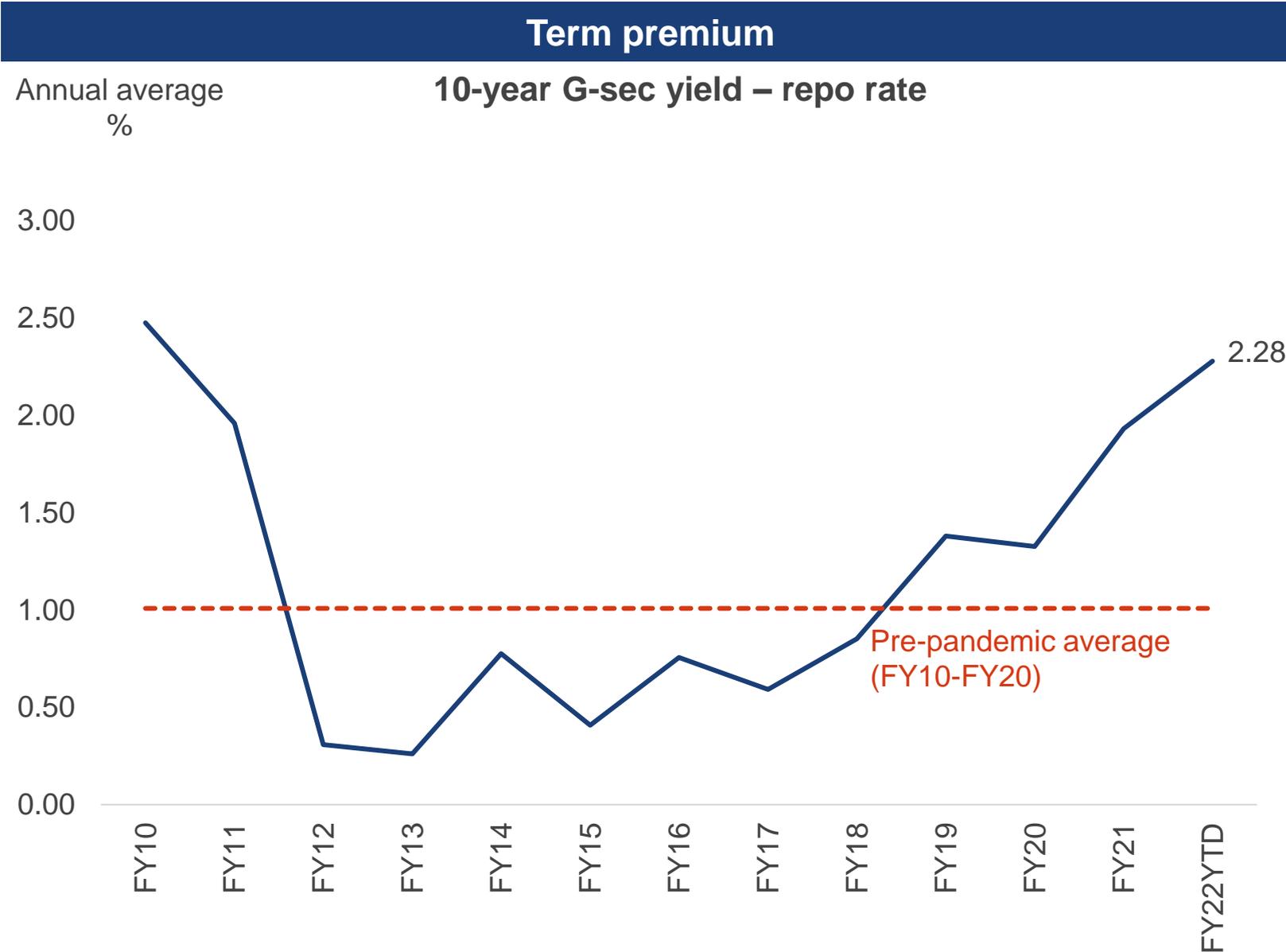
10-year G-sec yield (fiscal-end, %)



Note: F refers to CRISIL's forecasts
 Source: Clearing Corporation of India Ltd (CCIL), CRISIL

- We expect 10-year G-sec yield to rise to 7.1% by March 2023 (with risks tilted to the upside) compared with an expected 6.9% in March 2022
- Fundamental pressures have increased because of higher gross market borrowings by the central government, surging crude oil prices, and inflation risks
- We expect inflation to be higher than the RBI's current projection of 4.5% for fiscal 2023, which could push the central bank to raise the repo rate at least twice that year
- Adverse spillovers are expected from the US monetary policy, which is expected to tighten at the fastest pace seen since the Global Financial Crisis. S&P Global expects the Fed to raise its funds rate six times in calendar year (CY) 2022. Reduction in the Fed balance sheet is expected by early 2023

Term premium touches decadal high

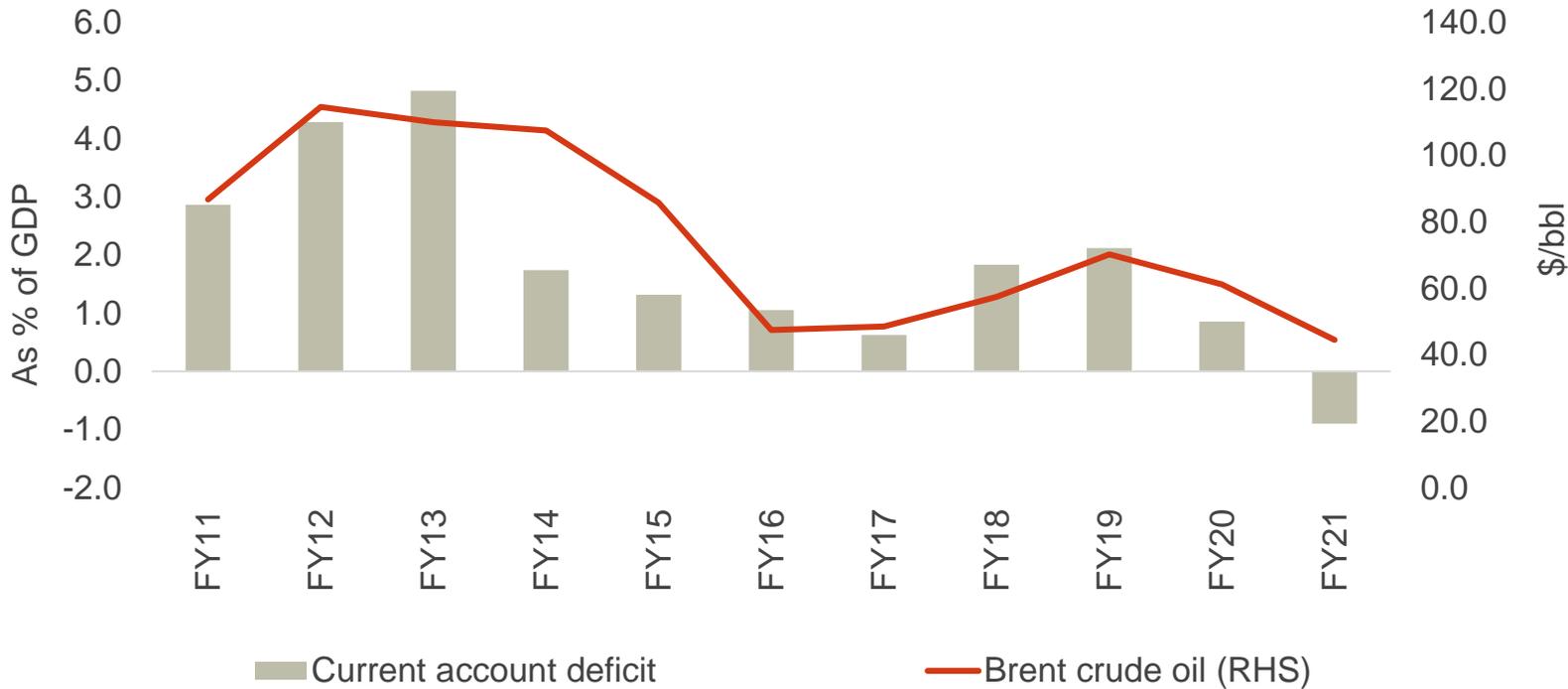


Note: FY22YTD refers to average yields until February 2022
 Source: CCIL, RBI, CRISIL

- Term premium, or the difference between yield on the 10-year G-sec and the repo rate, touched a record high in fiscal 2022 after 2010. This indicates that pass-through of the RBI's rate cuts to long-term interest rates remains limited
- While the repo rate has been unchanged in the past two years at the lowest point seen in the past decade, the 10-year G-sec yield did not ease as much, as fundamental pressures from a wide fiscal deficit and high inflation were factored in by investors

Current account balance outlook

Current account balance closely tracks crude oil price trajectory



India's current account deficit (CAD) expected to touch 1.6% of GDP in fiscal 2022, and increase to 2.2% in fiscal 2023

- CAD is expected to widen following the rise in Brent crude oil price, pushing up the goods import bill
- Slowing global growth implies external demand will not support exports as much, leading to widening of the merchandise trade deficit
- Revival in services trade (particularly, contact-based) and remittance inflows next fiscal will support current account balance to an extent

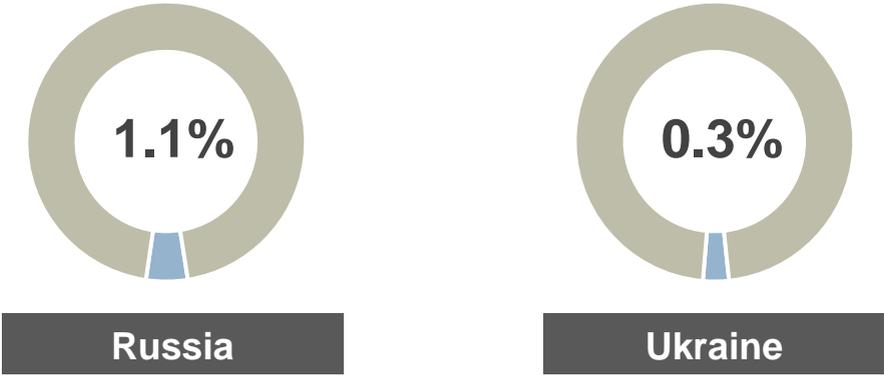
Episodes of Brent crude oil prices above \$80/bbl are associated with spikes in the current account deficit and, consequently, depreciation of the rupee

Oct 2007- Sept 2008	Crude oil price ranged 82-132/b	CAD widened to 2.3% of GDP in FY09 from 1.3% in the previous fiscal	The exchange rate depreciated 15.3% in this period
Oct 2010- Oct 2014	Crude oil price ranged 82-125/b	CAD touched a decadal high of 4.8% in FY13	The exchange rate depreciated 9.5% on average

Source: RBI, CEIC, CRISIL

Exposure to the Russia-Ukraine crisis

Low share in India's trade (imports + exports)



Top 3 items of India's trade	
Exports	
Russia	Ukraine
Pharmaceutical products	Pharmaceutical products
Electrical machinery	Electrical machinery
Boilers and mechanical appliances	Oil seeds
Imports	
Russia	Ukraine
Mineral fuels	Animal or vegetable fats
Pearls, semi/ precious stones	Fertilisers
Project goods	Inorganic chemicals

Note: Data based on 3-year average of fiscals 2019-2021
 Source: Ministry of Commerce and Industry, S&P Global (February 2022), CRISIL

Direct impact

- Higher international commodity prices (energy, edible oils, agricultural products, and metals)
- Impact on India's overall trade flows expected to be lesser owing to low share of trade with Russia and Ukraine
- Top exports to both countries (pharmaceutical products) are necessary goods, so unlikely to be impacted. Import cost will rise owing to higher prices of crude (affecting mineral fuel, fertiliser imports) and edible oils
- Rise in export insurance costs and global shipping rates

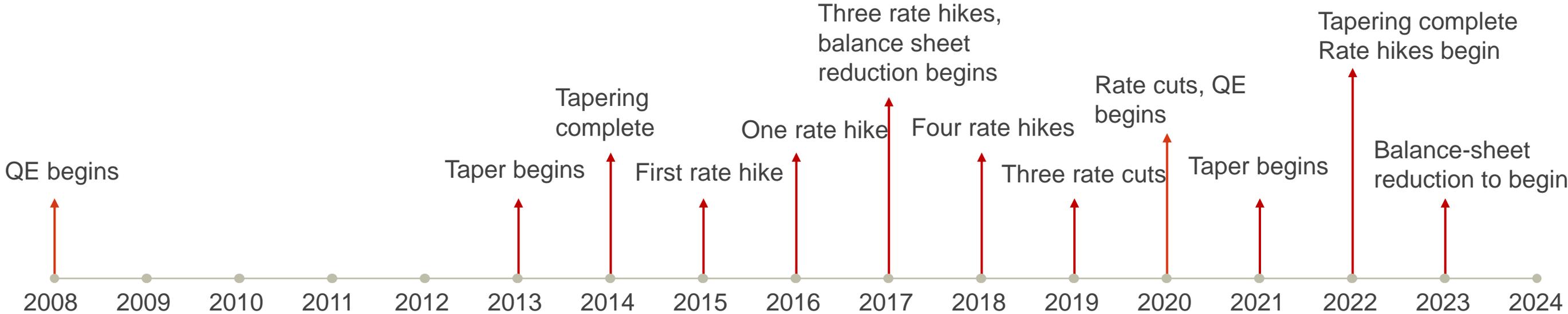
Indirect impact

- External demand for exports may be affected as Europe (India's second-largest export destination) expected to be one of the hardest hit regions as growth slows down
- Supply-chain disruptions: India's major trading partners (US, Europe, China) have high import-dependency on Russia and Ukraine for select commodities

Fed's policy normalisation likely to be the fastest since 2008

- S&P Global expects six rate hikes by the US Fed in CY2022, and five more between 2023 and 2024. It expects the Fed to start reducing its balance sheet from early 2023
- The first rate hike happened two years after quantitative easing (QE) began in March 2020. In contrast, the first rate hike after the 2008 Global Financial Crisis came seven years after QE began. Moreover, the rate hikes are frontloaded this time, i.e., the maximum number of hikes have happened in the first year. After the 2008 crisis, the number of hikes had increased gradually, peaking at four in 2018
- During the previous episode of peak tightening in 2018, the RBI raised the repo rate twice despite CPI inflation coming under target. This was done to stabilise the rupee, which depreciated 11% that year

Fed's policy timeline



Source: Fed, S&P Global February 2022 expectations

India is better placed than in fiscal 2013 to withstand external shocks

Indicator		Taper tantrum						Four Fed rate hikes						
		FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22E	FY23F
External liabilities	CAD (% of GDP)	2.7	4.3	4.8	1.7	1.3	1.1	0.6	1.8	2.1	0.9	-0.9	1.6	2.2
	External debt (% of GDP)	18.6	21.1	22.4	23.9	23.8	23.4	19.9	20.1	19.8	20.6	21.1	20.1*	N/A
	- Short-term external debt (% of GDP)	3.9	4.3	5.3	4.9	4.2	4.0	3.8	3.9	4.0	3.8	3.8	3.2*	N/A
Adequacy of forex reserves	Months of import cover	9.4	7.6	7.2	7.7	8.7	11.2	11.5	10.4	9.4	11.4	18.0	12.8 (YTD)	N/A
	Reserves/(short-term debt + CAD)	2.7	1.9	1.6	2.5	3.0	3.4	3.6	2.8	2.5	3.6	7.5	4.2	N/A
Domestic macroeconomic health	GDP growth (% y-o-y)	8.5	5.2	5.5	6.4	7.4	8.0	8.3	6.8	6.5	3.7	-6.6	8.9@	7.8
	CPI inflation (% y-o-y)	10.4	8.4	9.9	9.4	5.9	4.9	4.5	3.6	3.4	4.8	6.2	5.5	5.4
	General govt deficit (% of GDP)	8.6	8.3	7.5	7.0	7.1	7.4	7.4	6.7	6.6	7.6	14.2	11.4^	9.5^
	General government gross debt (% of GDP)	66.0	68.3	67.7	67.4	66.8	68.8	68.7	69.5	70.2	73.9	90.2^	90.5^	90.9^

Vulnerability indicator ■ High ■ Low ■ Neutral

Compared with the previous two episodes of tight global financial conditions:

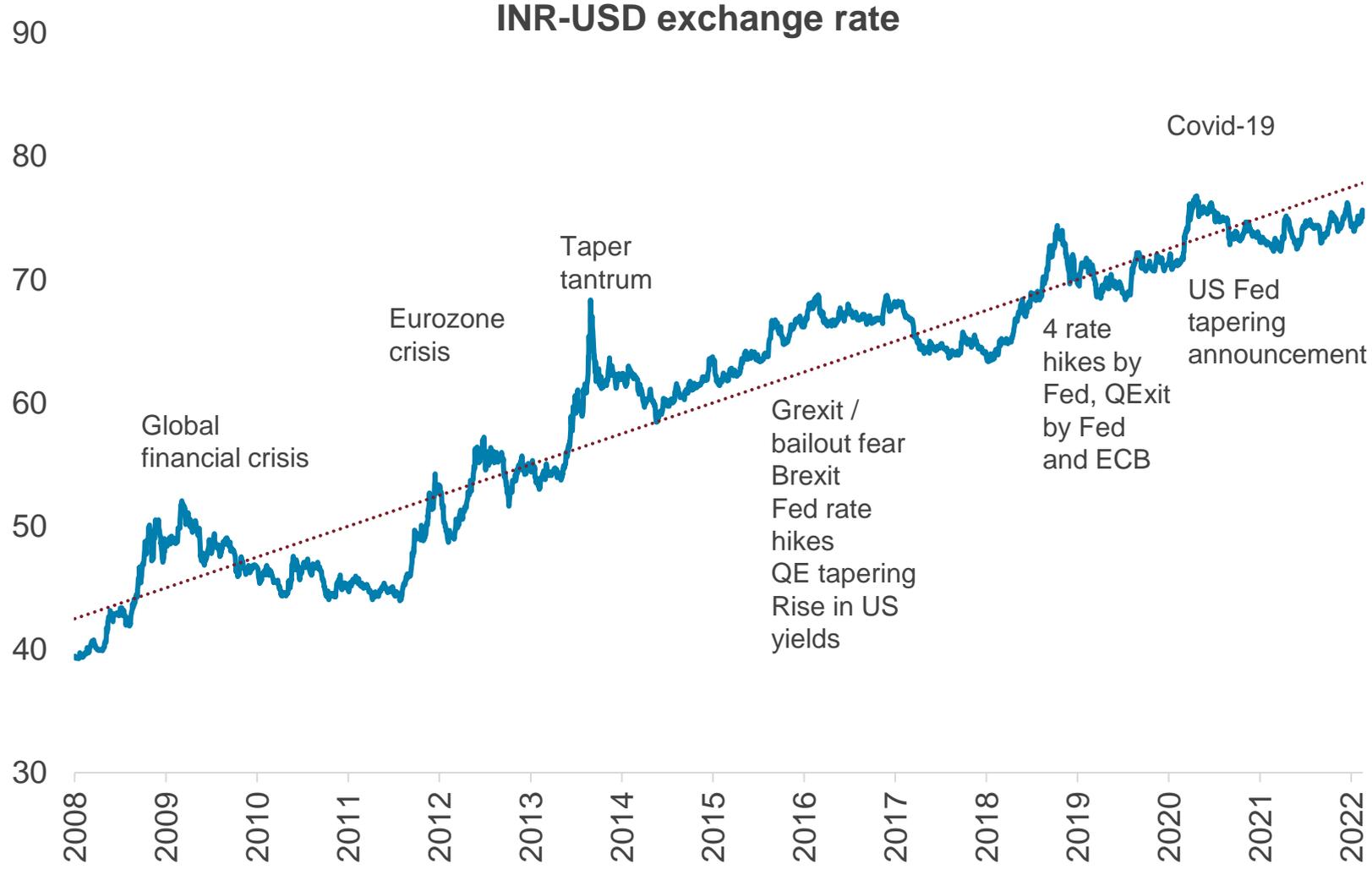
- Foreign exchange reserves are adequate to cover external liabilities than both preceding periods
- GDP growth stronger than both periods
- CAD likely to be comparable with fiscal 2019, but will be narrower than in fiscal 2014
- Inflation lower than fiscal 2014, but higher than fiscal 2019
- The government's fiscal health weaker than previous two periods

Note: F refers to CRISIL's forecasts. *As of September 2021, FY22 import cover is average until January 2022. @NSO second advance estimate. ^S&P Global estimates

Source: Source: RBI, National Statistics Office, CEIC, International Monetary Fund, S&P Global, CRISIL

Depreciation bias of the rupee to intensify

Rupee currently below its long-term trend, expected to depreciate



Source: RBI, CEIC, CRISIL

Rupee seen depreciating to 77.5/\$ by March 2023, amid bouts of volatility

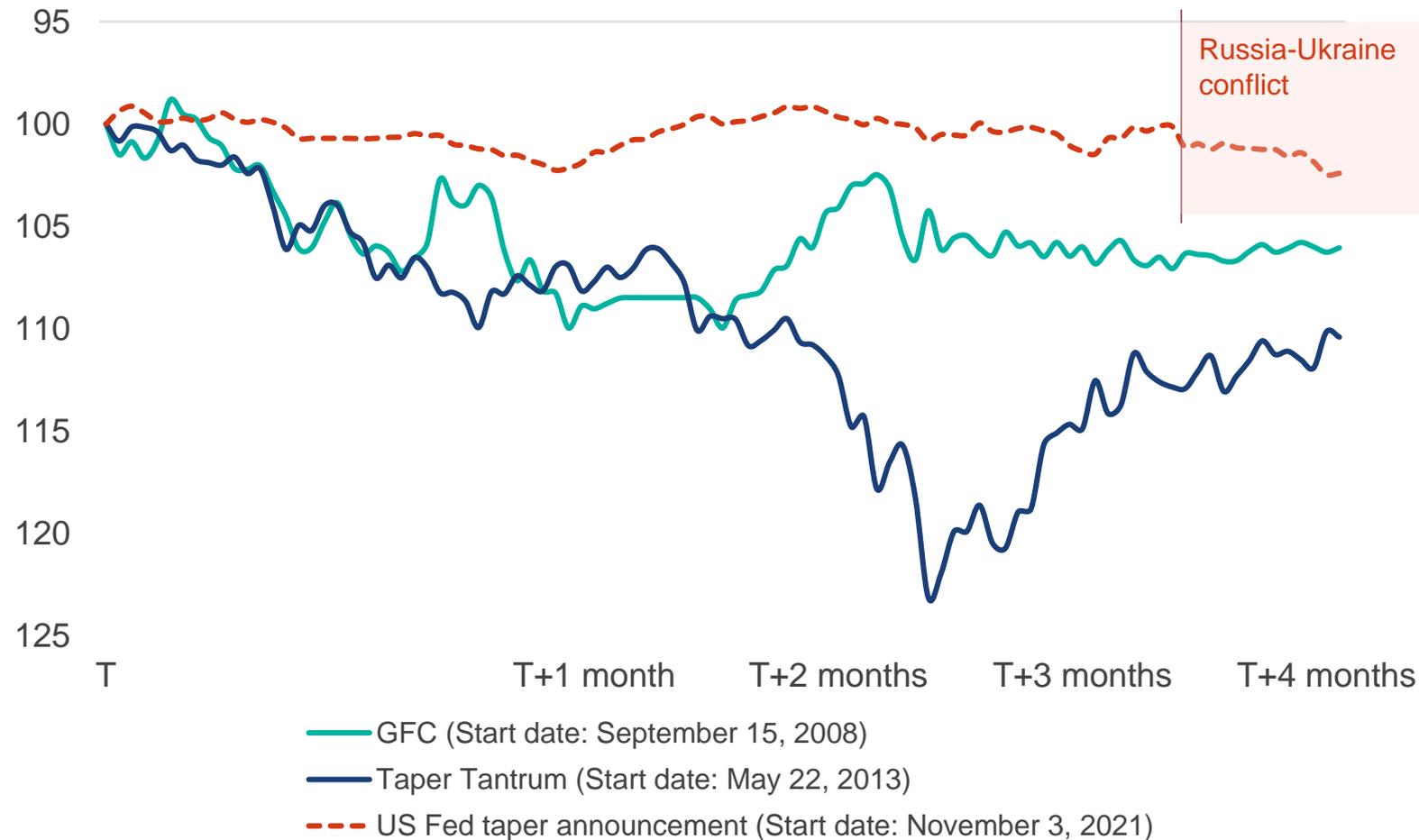
The rupee-dollar exchange rate in recent times has been relatively stable in the face of heightened geopolitical tensions, firming of crude prices, foreign portfolio investment (FPI) outflows, and tapering by the US Fed. Going ahead, some of the fundamental factors influencing the rupee trajectory are projected to worsen, putting depreciation pressure on the currency:

- Rate hikes expected by the Fed this year could be the fastest since the 2008 Global Financial Crisis
- Rise in crude oil prices and slowing global growth are expected to widen CAD
- The rupee is currently below its long-term range and is expected to revert to the historical trend, as also seen in previous episodes (financial crisis, taper tantrum, and the Fed rate hikes in fiscal 2019)

Why has the rupee been resilient so far?

The rupee has been relatively stable since November compared with previous episodes

Start of episode = 100,
Values in reverse order



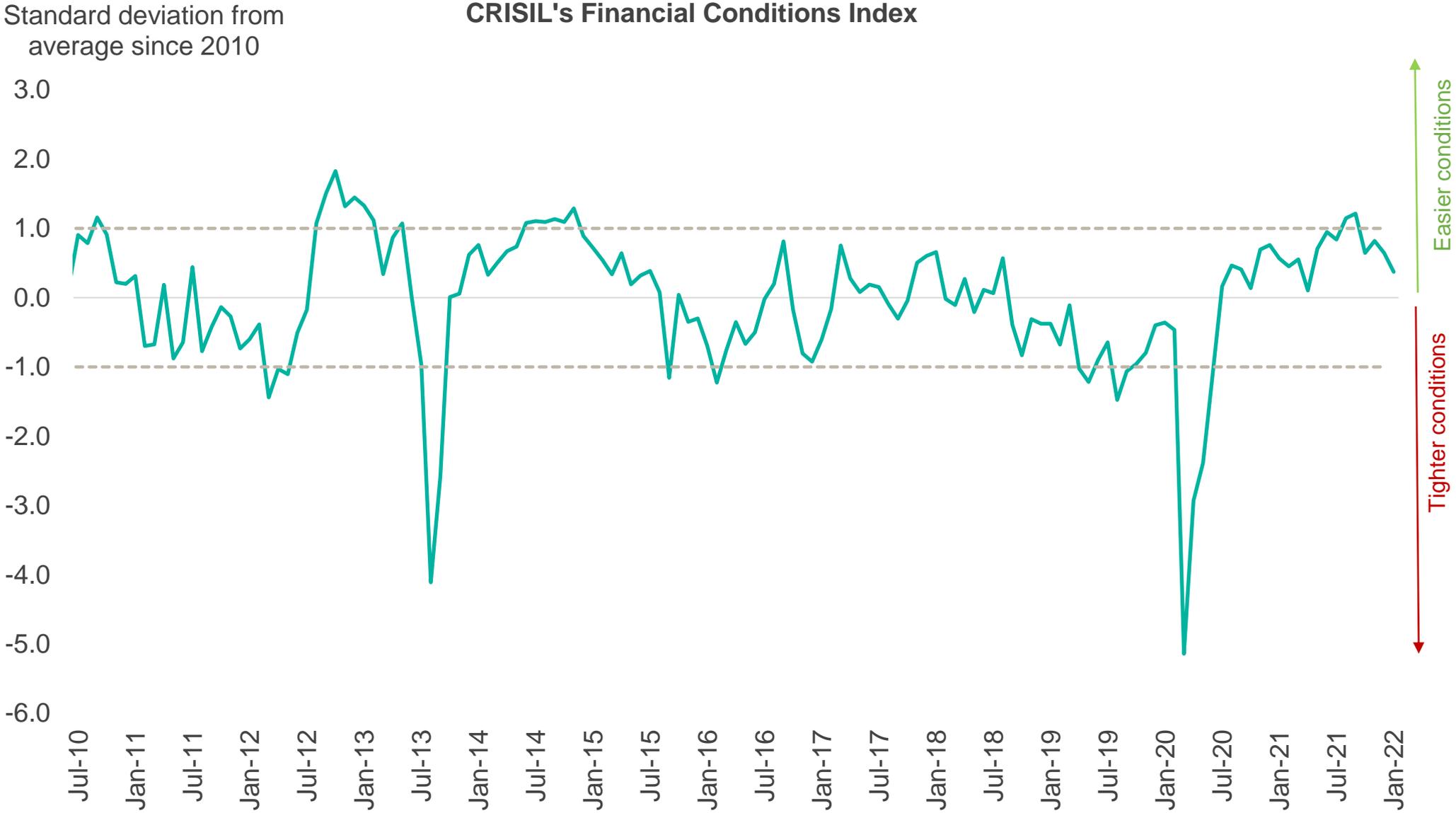
Note: Depreciation and volatility in the table measured for each of the episodes for the four months since the start date (from T to T+4 months), * as measured through standard deviation
Source: RBI, CEIC, CRISIL

- The rupee has been relatively stable since the Fed announced tapering in November. It has depreciated only recently after the Russia-Ukraine conflict escalated

Period	Depreciation (%)	Volatility *
GFC	6.05	2.4
Taper tantrum	10.4	5.3
Fed tapering announcement	2.4	0.8

- The rupee's stability in this period is owing to lesser vulnerability relative to previous crises: lower CAD, higher forex reserves (~\$630 billion)
- Higher import cover and low short-term external debt are a source of comfort and, so far, limit the downside to the exchange rate
- The RBI's interventions: steady rate of dollar purchases in the forward market

Domestic financial conditions becoming less accommodative



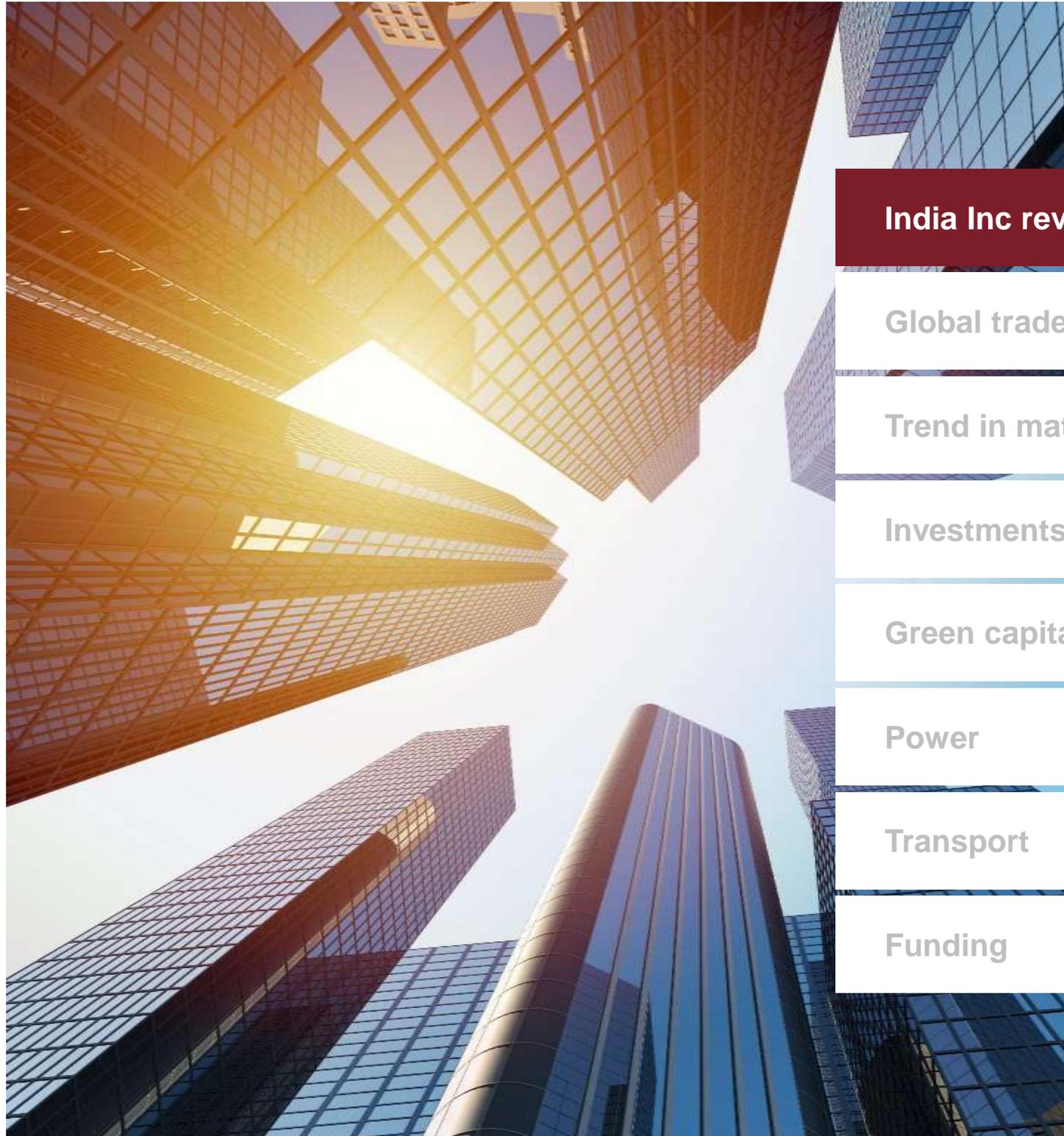
- Domestic financial conditions remain easier based on the long-term average (since 2010), but are slowly becoming less accommodative compared with the previous year
- Tightening global financial conditions has resulted in FPI outflows and rise in interest rates
- However, domestic monetary policy and the rupee's resilience have provided support

Note: CRISIL's FCI is a monthly tracker that combines 15 key parameters across equity, debt, money and forex markets along with policy and lending conditions. A positive index value implies easier conditions and a negative index, tighter conditions relative to long-term average since 2010
 G-SAP: G-sec acquisition programme
 Source: CRISIL

Macroeconomic outlook

		FY18	FY19	FY20	FY21F	FY22F	FY23F
1	Real GDP growth (%)	6.8	6.5	3.7	-6.6	8.9*	7.8
2	Consumer price inflation (%)	3.6	3.4	4.8	6.2	5.5	5.4
3	CAD/ GDP (%)	1.8	2.1	0.9	-0.9	1.6	2.2
4	Exchange rate (Rs/\$, March)	65.0	69.5	74.4	72.8	76.5	77.5
5	Fiscal deficit/ GDP (%)	3.5	3.4	4.6	9.2	6.9 ^{^^}	6.4 [#]
6	10-year G-sec yield (March-end)	7.6	7.5	6.2	6.2	6.9	7.1 [^]

F: Forecast. *NSO second advance estimate. [^]With upward risk, ^{^^}RE, [#]BE
 Source: NSO, RBI, CRISIL



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

Power

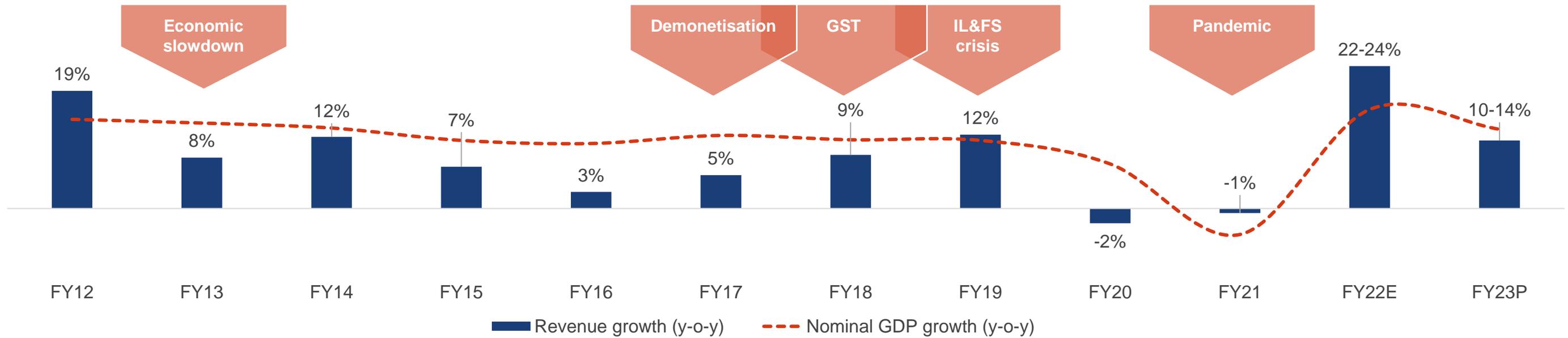
Transport

Funding

Volume growth to lead staggered recovery curve next fiscal

Price hikes to remain moderate for key sectors compared with double-digit growth in this fiscal

Trend in on-year revenue growth of ~740 listed corporates analysed



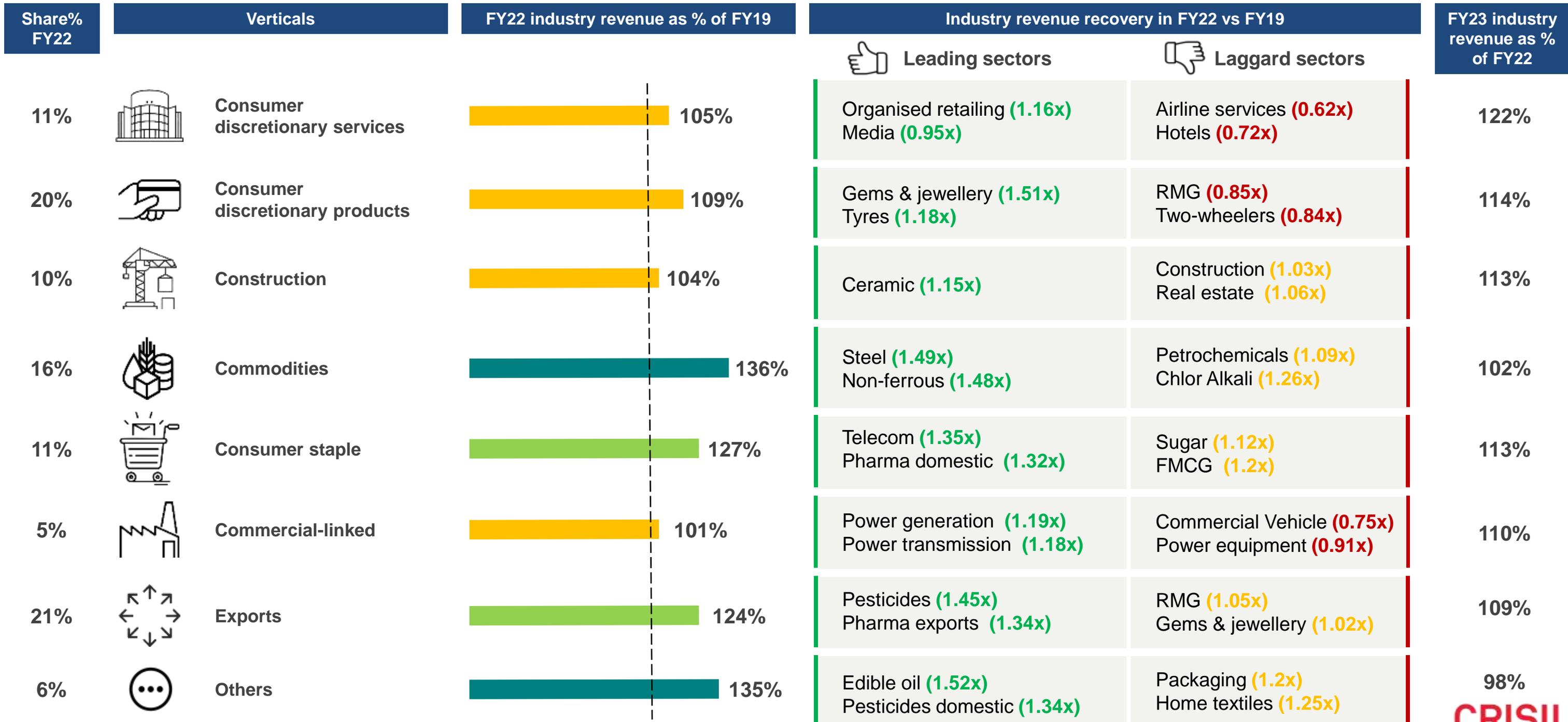
Note: Figures of the ~740 listed corporates excludes oil & gas, and BFSI. Numbers of 640 companies estimated at the consolidated level and ~100 companies at the standalone level
P-projected; E-estimated
Source: Company reports, Industry, CRISIL Research

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22E	FY23P
10 yr. Avg. G-sec yield	8.6%	8.4%	8.8%	8.6%	8.0%	7.1%	7.1%	7.9%	6.8%	6.1%	6.4%	7.0%^
WPI inflation	8.9%	7.4%	5.2%	1.2%	(3.7%)	1.7%	3.0%	4.3%	1.7%	1.3%	12.2%*	

Note: Colour coding of year-wise 10-year G-sec and WPI inflation is on the basis of the 20-year average trend; ^ Year-end March 2023; P-projected; E-estimated; * YTD for FY22
Source: Industry, CRISIL Research

Consumption-linked and construction sectors to drive revenues next fiscal

High base to restrict incremental growth for the commodities vertical during the year



Note: Dotted line represent scale of 100%; Fiscal 2019 (pre-pandemic) level revenues are compared for recovery ; This analysis considers fiscal 2018 as the pre-pandemic year
Source: Industry, DGFT, CRISIL Research

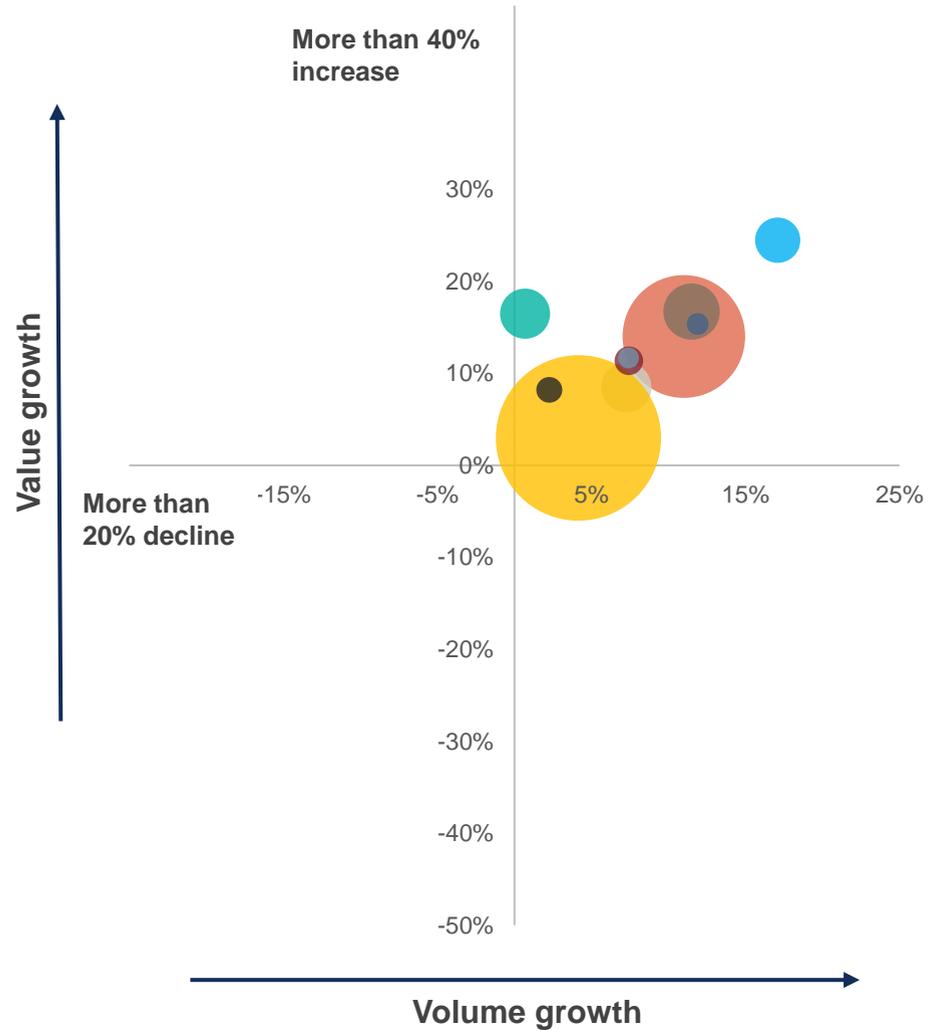
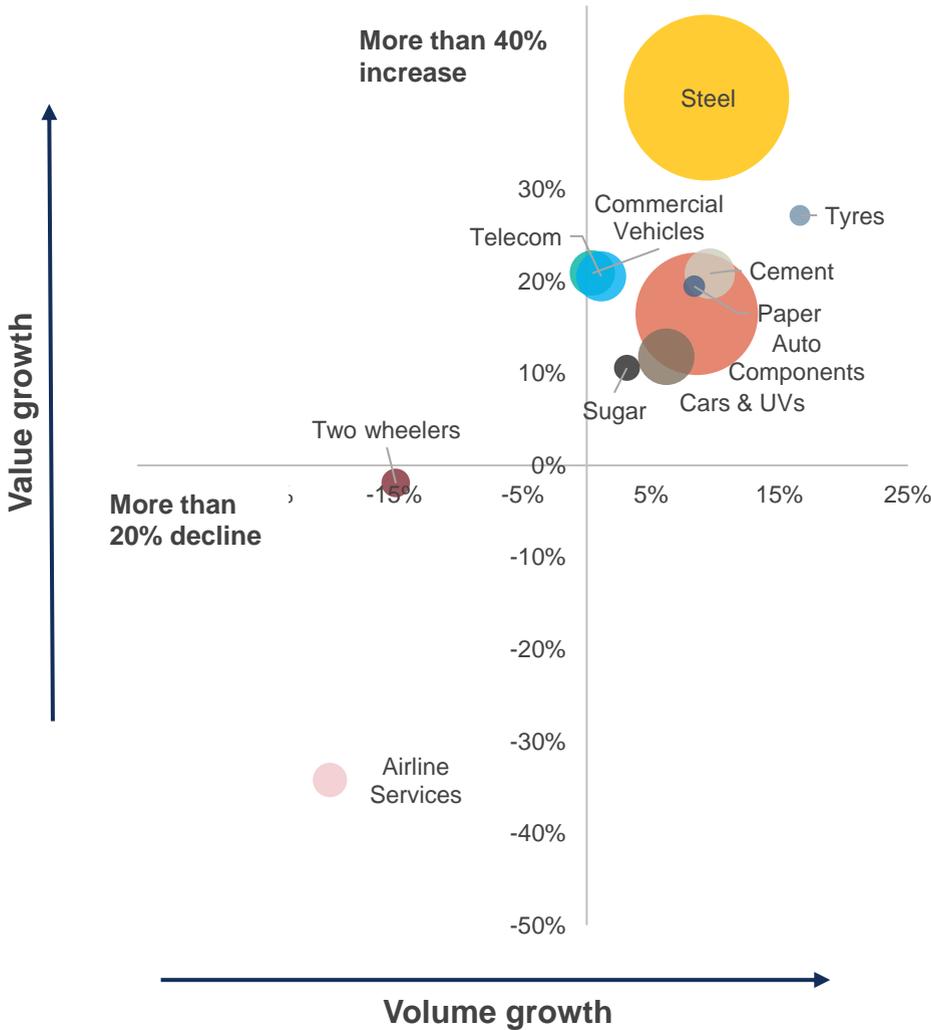
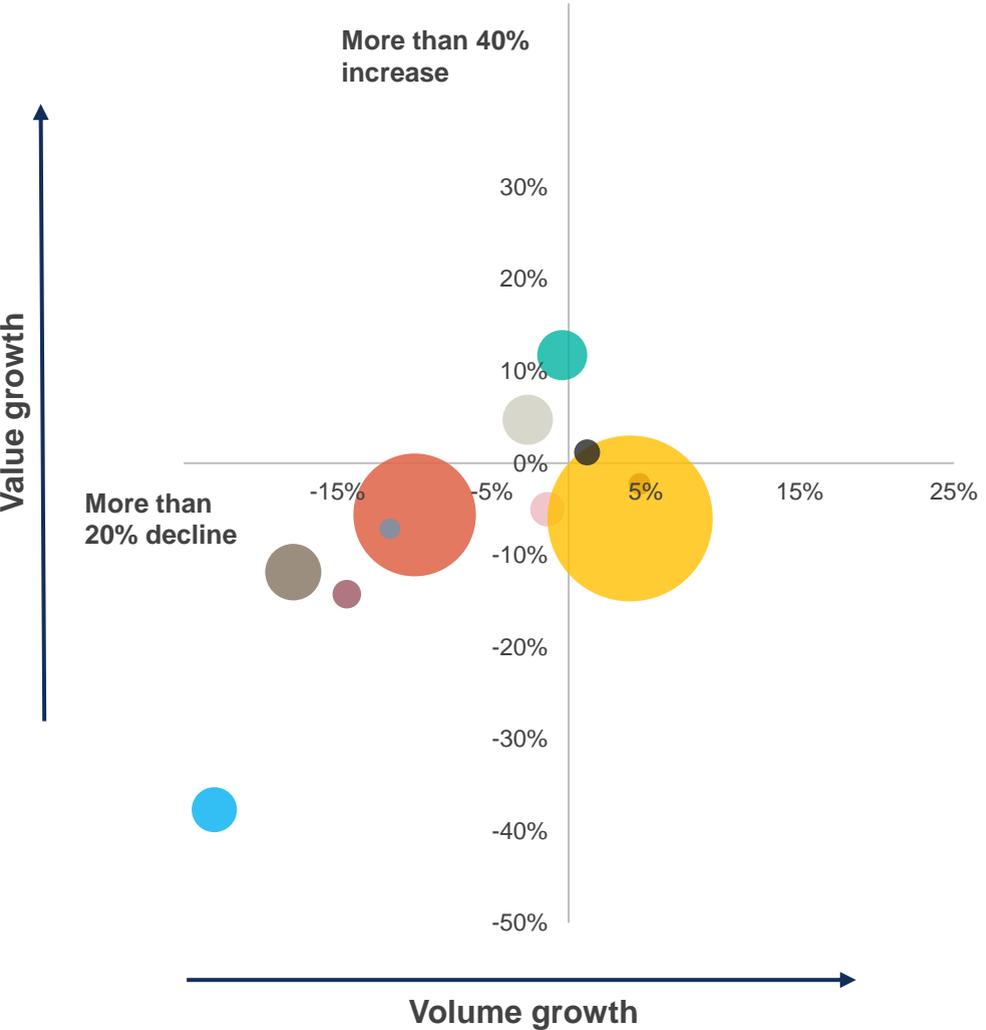
Price stoked recovery this fiscal, volume the driver for next fiscal

Of our sample 42 sectors tracked, 11 key sectors^ to log ~12% value growth next fiscal, driven by ~7% volume growth

FY20: Volumes drop sharply

FY22: Metals, tyres see high value growth

FY23: 8 of key 11 sectors to see only modest price growth



Note: ^26% in overall revenue in fiscal 2022; size of bubble represents share in overall sectoral revenue
Source: Industry, CRISIL Research

India Inc's wage growth to hasten next fiscal, rural payouts a monitorable

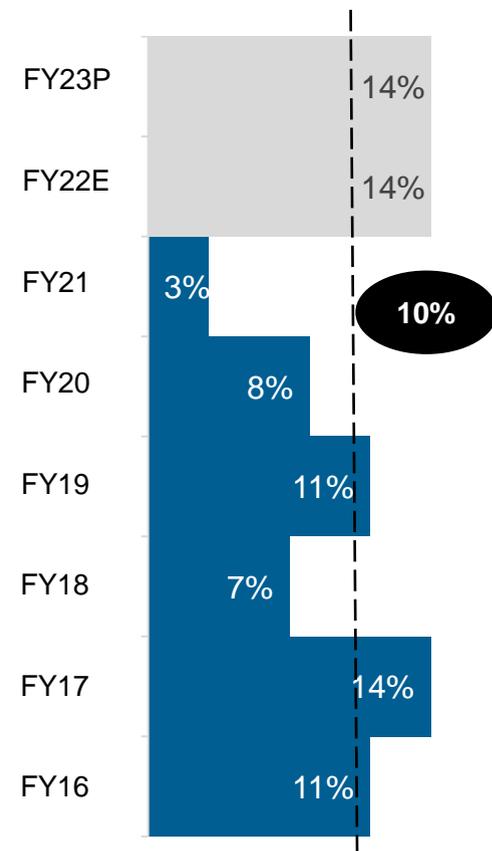
Slower growth in crop income and an expected 26% fall in MGNREGA expenditure to subdue rural incomes

Income estimation using KLEMS data#

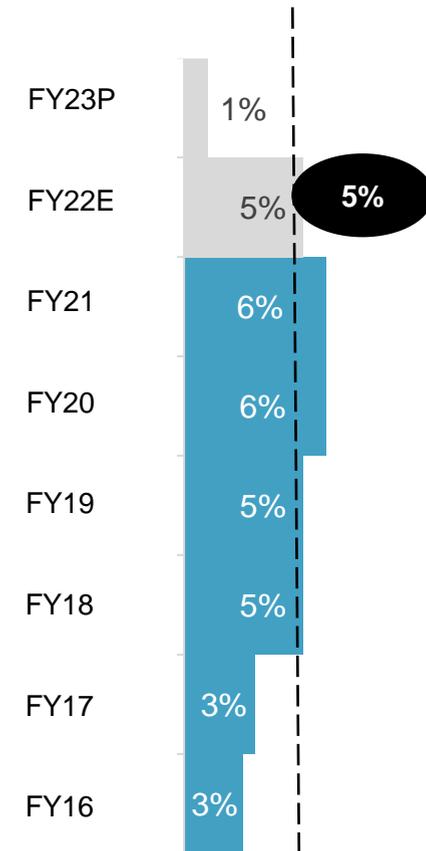
Rs 89 lakh crore (FY21)



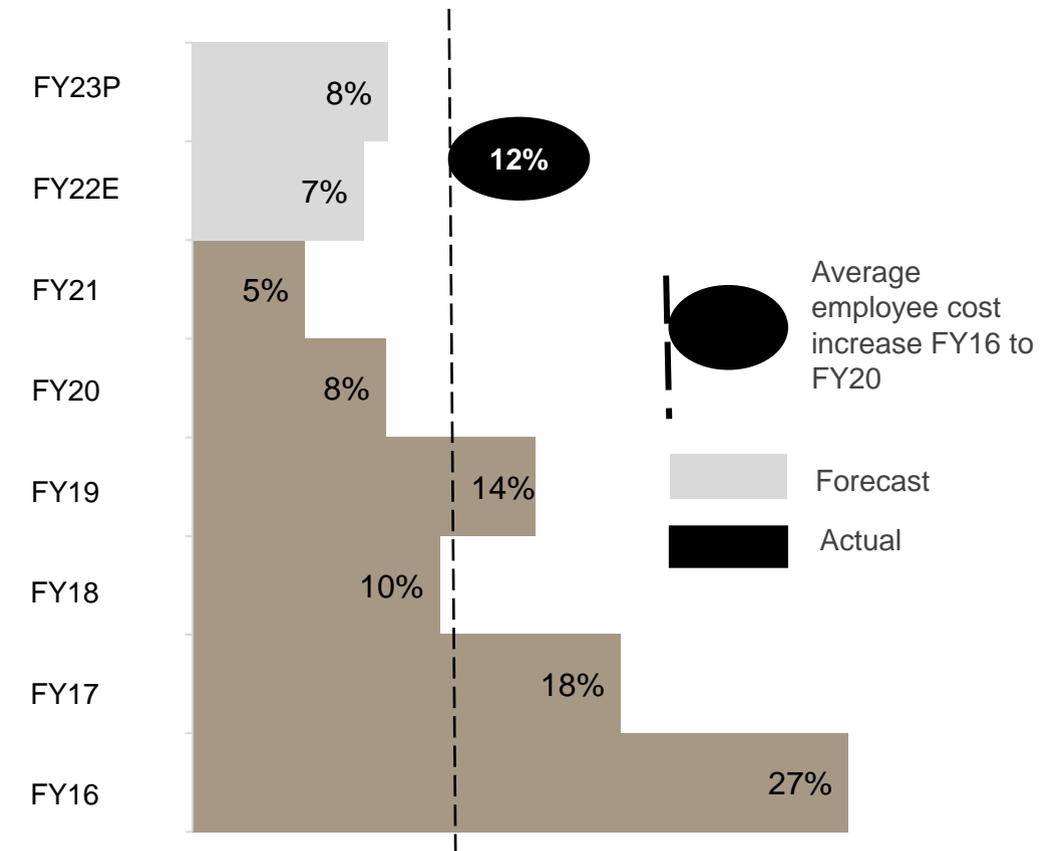
Corporate India – 40,000 companies (wage bill ~Rs 12 lakh crore*)



Rural-agri (crop, livestock, MGNREGA, labour wages) (outlay ~Rs 17 lakh crore*)



Government (outlay ~Rs 17.5 lakh crore*)

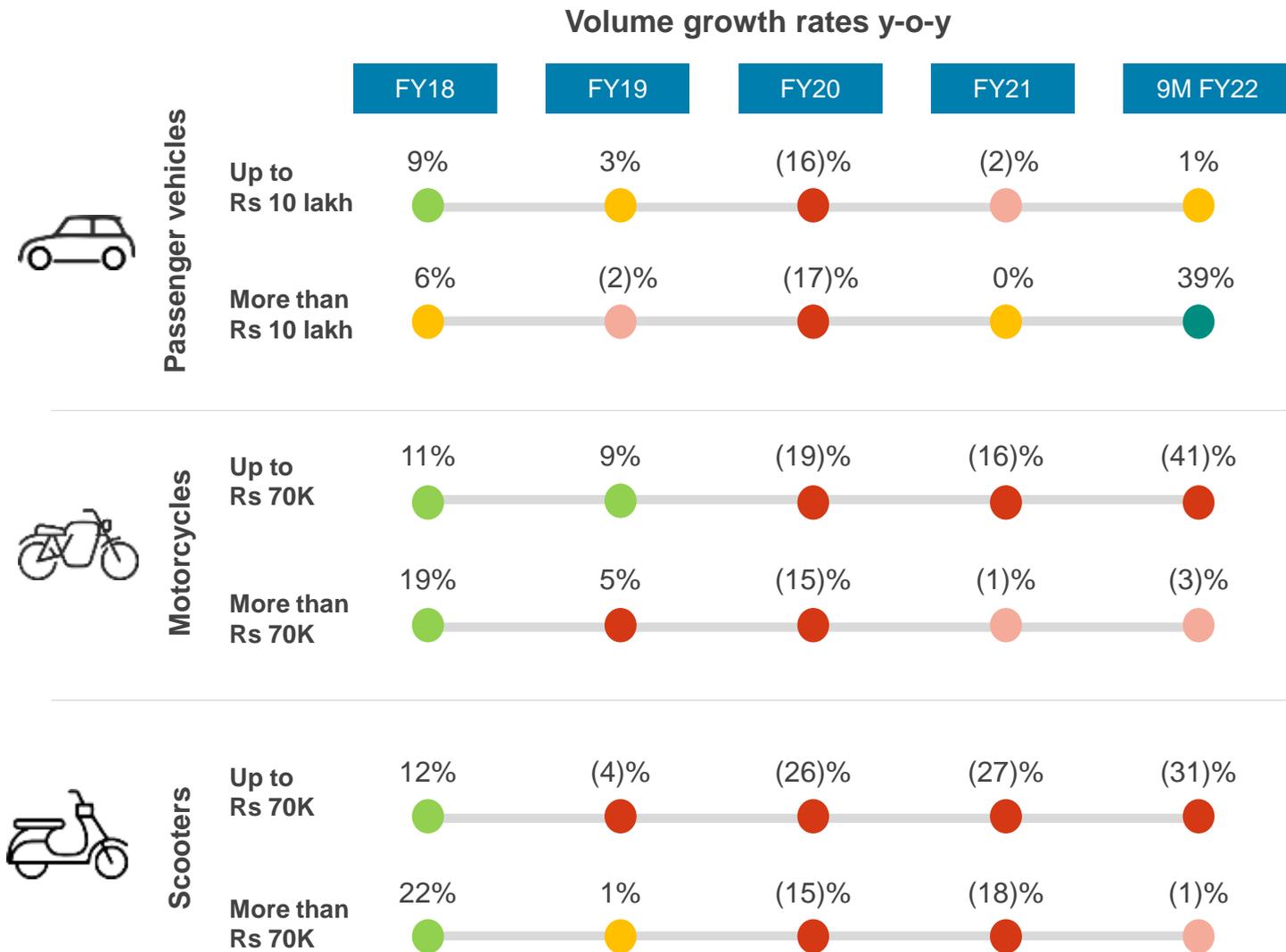


Notes: Top 800 companies (~Rs 4 lakh crore*) are used to estimate payout trends for FY22 by using actuals for 9 months of FY22; P-projected; E-estimated; Government data represents numbers of central government, defense and 25 state governments including pension payouts.; #refers to KLEMS report 2018-19 * As of FY21; Income growth has been determined through a bottom up approach by combining staff expenses of 40,000 companies for Corporate India, different farm revenue streams for rural and salaries of central government, state governments and defense employees and postal employees
Sources: KLEMS database, RBI; NAFIS survey 2016-17, NABARD; Pay and allowances report 2019-20, State documents from Comptroller and Auditor General of India; Union Budget documents 2022-33; Industry, CRISIL Research

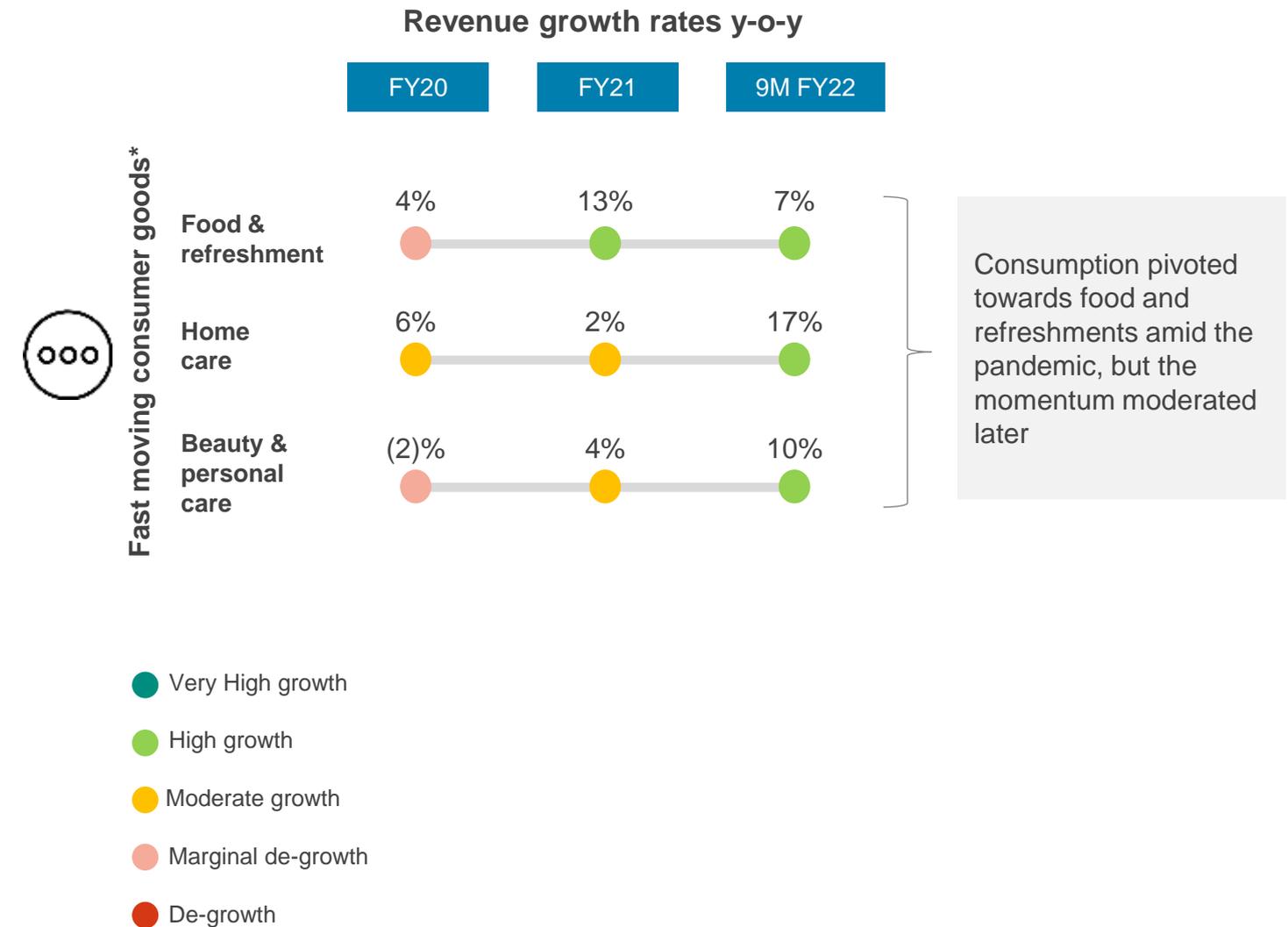
Sales of entry-level cars and motorcycles under pressure

Premium segments have recovered relatively faster

Lower-priced variants underperformed premium variants



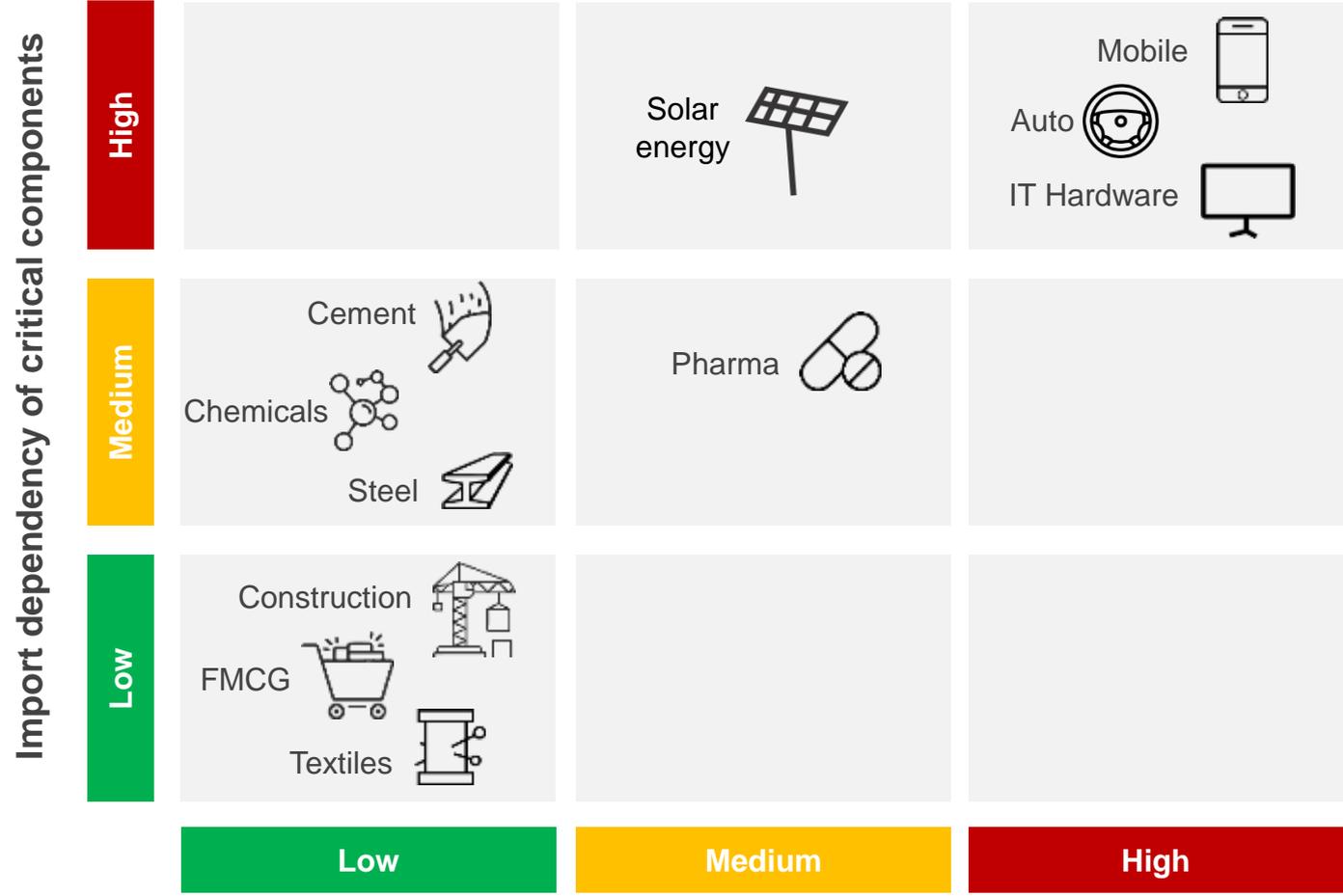
Food and refreshments growth moderates on a high base



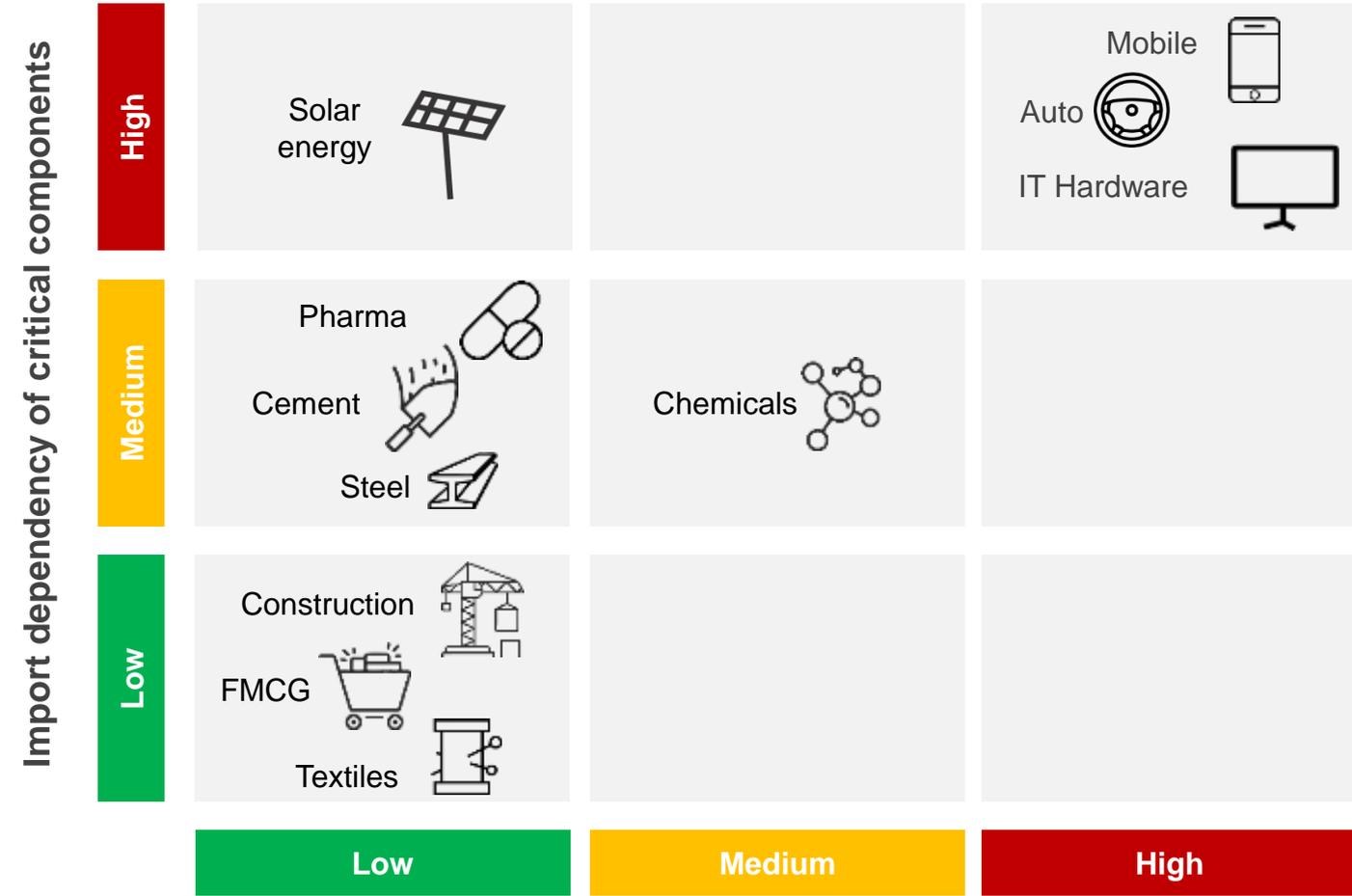
Note: *Revenue growth of a key FMCG player is considered
Source: SIAM, Company Reports, Industry Estimates, CRISIL Research

Supply-chain risks – chip shortage expected to persist

Sectors dependent on semiconductors and imports expected to face high supply-chain risks



Global supply-chain risks in FY22E



Global supply-chain risks in FY23P

The shortage of semiconductors, or chips, due to surging demand amid pandemic-led disruptions in production would persist next fiscal. Palladium and neon are among the key raw materials used by chip fabricators. As much as 44% of palladium is supplied by Russia, while 50% of neon is supplied by Ukraine. While they may not be the sole suppliers, and there might be inventories of the material, the duration of their current conflict would determine the extent of impact on the supply chains. This will remain a monitorable. Hopefully, semiconductor supplies don't deteriorate from current levels

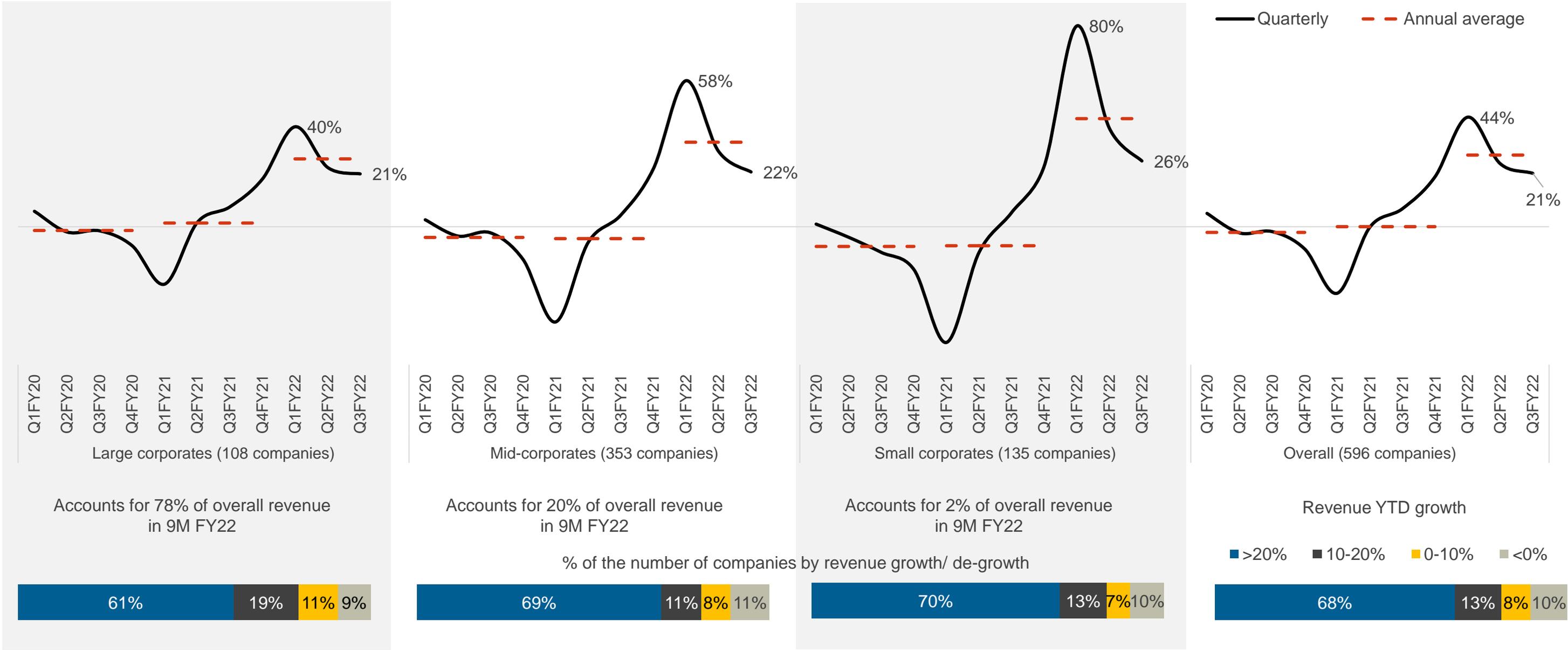
Rising crude oil prices amid geopolitical risk to increase disruption in chemicals

Local sourcing, self-reliance immunises domestic-driven industries

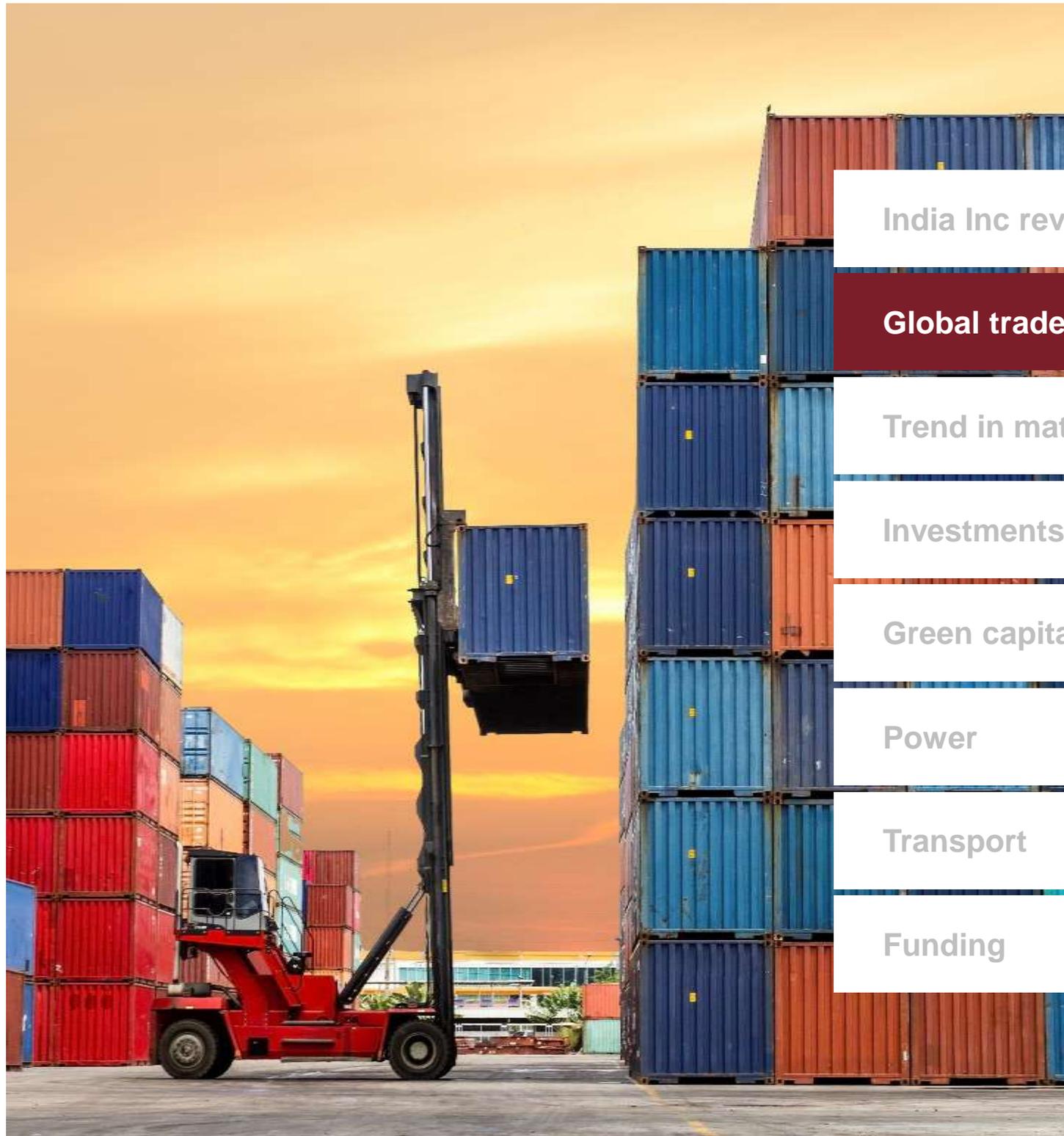
Note: E-estimated; P-projected; Import dependence: High: >50%, Medium; 25-50%; Low; <25%
Source: Industry, CRISIL Research

Recovery largely broad-based, shows quarterly analysis of ~600 players

Mid and smaller companies grow faster on-year over a low base



Note: Large players are defined as those with an annual revenue of over Rs 5,000 crore, mid-sized are those with annual revenue between Rs 500- 5,000 crore, and small players are those with annual revenue of Rs 500-250 crore; period for 9M FY22 refers to April-December 2021
 Source: Company reports, CRISIL Research



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

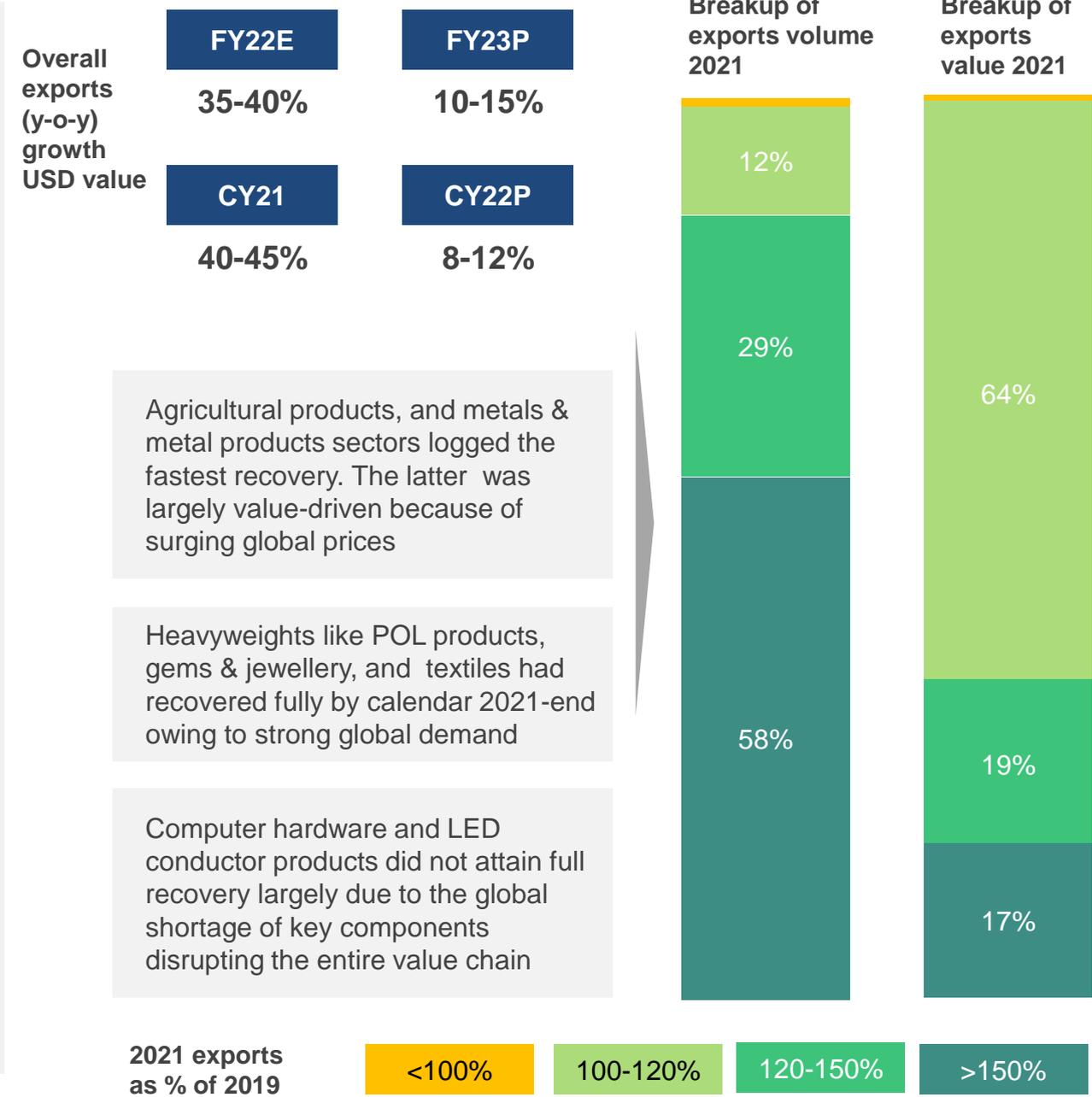
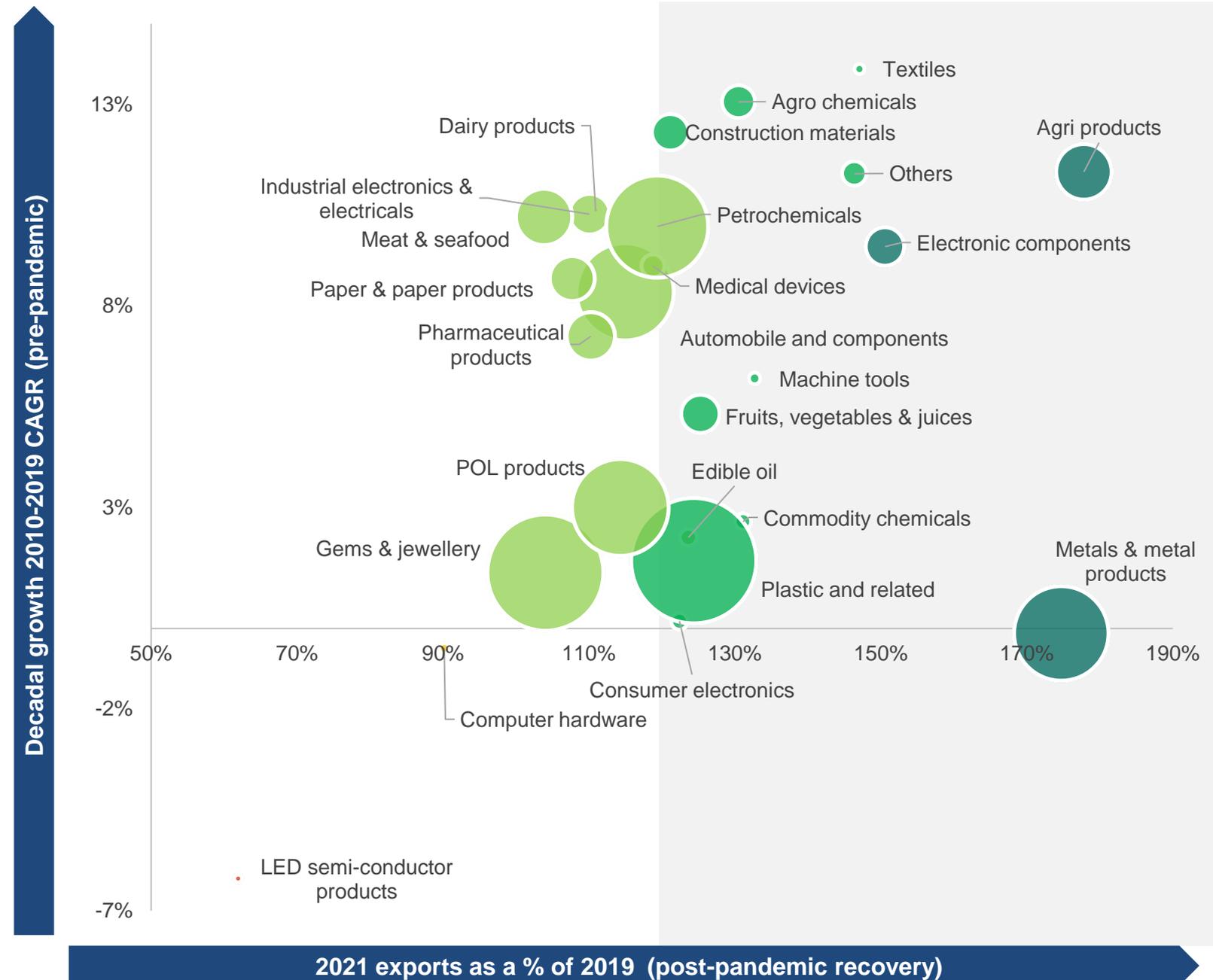
Power

Transport

Funding

Indian exports have rebounded strongly despite the pandemic waves

Around 35% of export value has recovered to more than 120% of pre-pandemic level

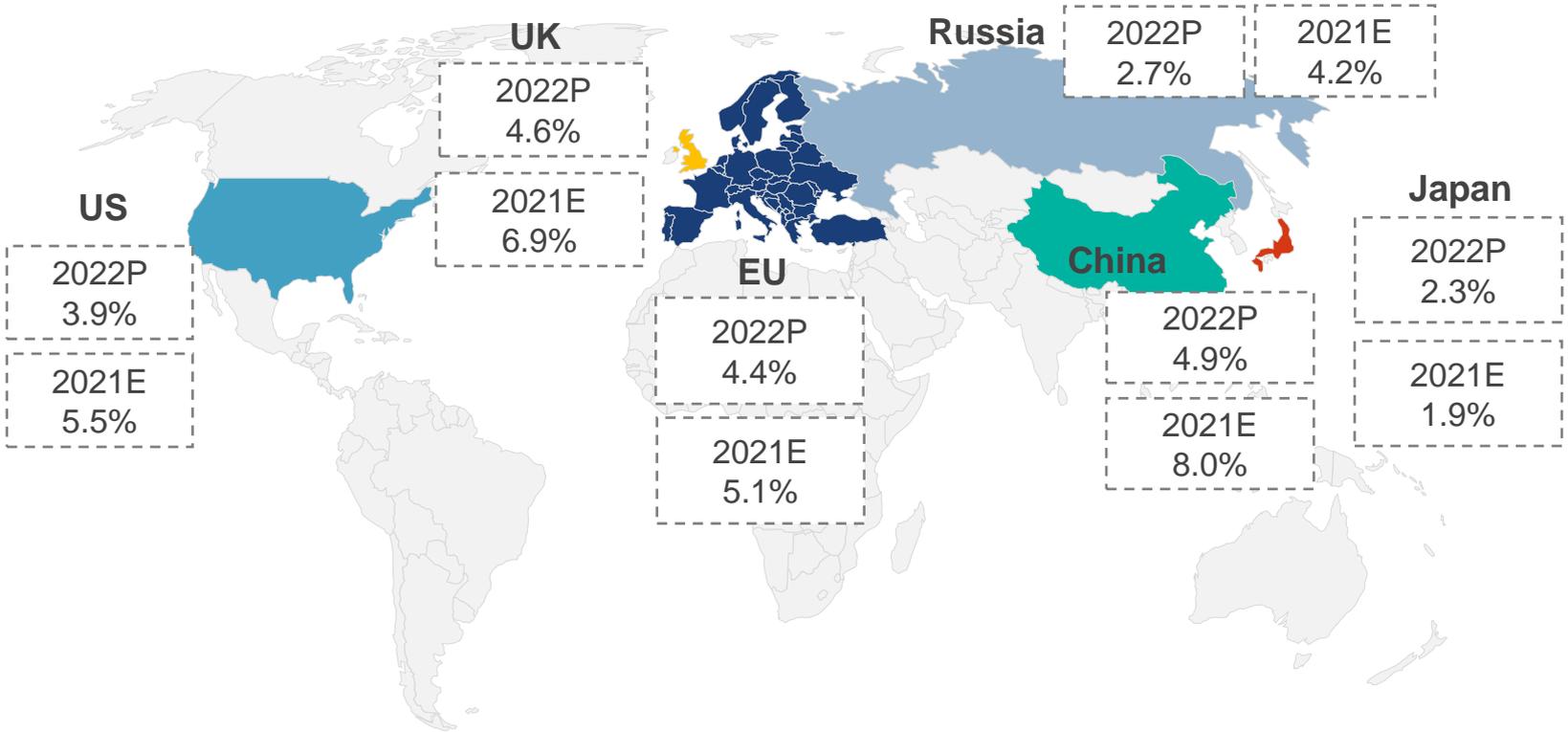


Note: Size of the bubble represents share of vertical in overall exports in CY2019; colours of the bubble matches with value split bar mentioned on the right side; underlying units in USD; POL products largely include petroleum, oil and lubricants
 Source: DGFT, Trade Map, CRISIL Research

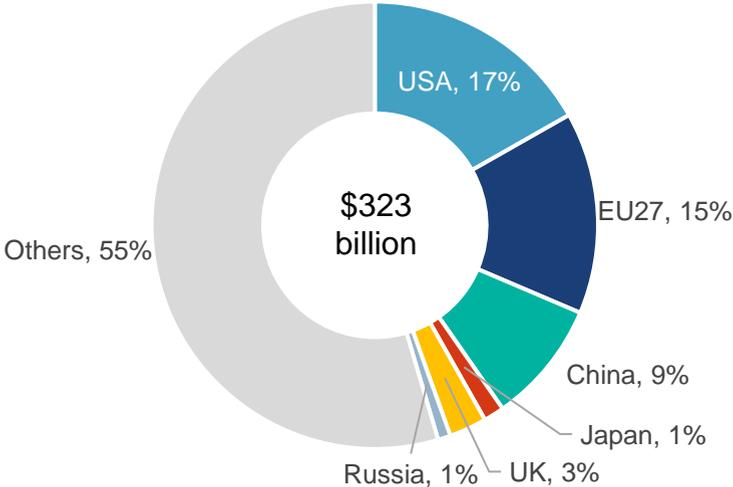
Most large trade partners to grow slower in calendar 2022

Exports to the US and the European Union key to growth momentum; Russia-Ukraine war to have limited direct impact

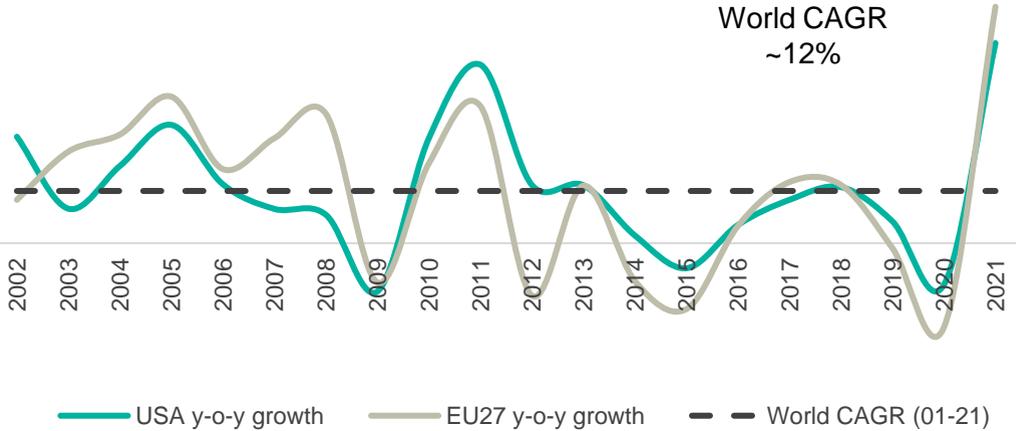
GDP growth estimates for key markets likely to be lower on a high base



US, EU and China together accounted for ~40% of India's exports in 2019



India's exports largely driven by the US and EU markets



- India's exports growth to witness moderation in 2022 as GDP growth of key export destinations such as the US, the UK, and the EU to slow down
- Direct impact of Russia-Ukraine conflict to export verticals of India to remain low
- Key items exported to Russia include pharmaceuticals, electronic components, auto & components, metals & meat/seafood. Key items imported from Russia include crude oil, coal briquettes, diamonds, and sunflower seed/ oil

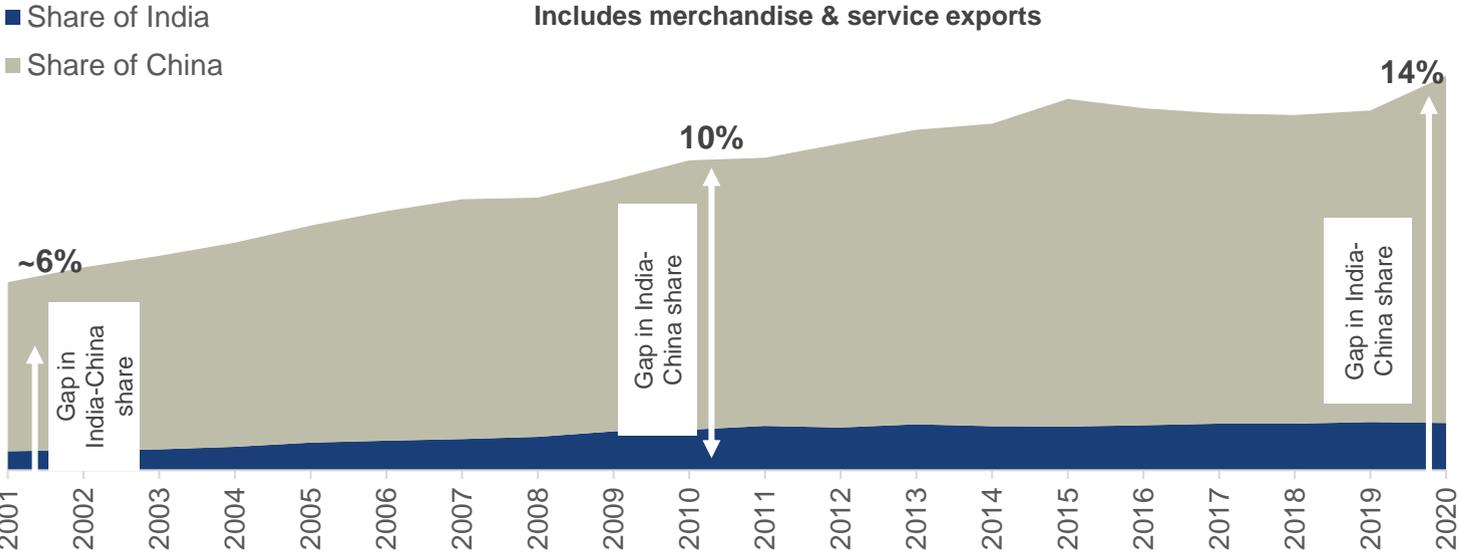
Note: P-projected; E-estimated; Represents India's merchandise exports exposure by regions
 Source: Industry, Trade Map, S&P reports, CRISIL Research

Note: Above trend represents exports of India to respective market

Structurally, India's share in global merchandise trade remains stagnant

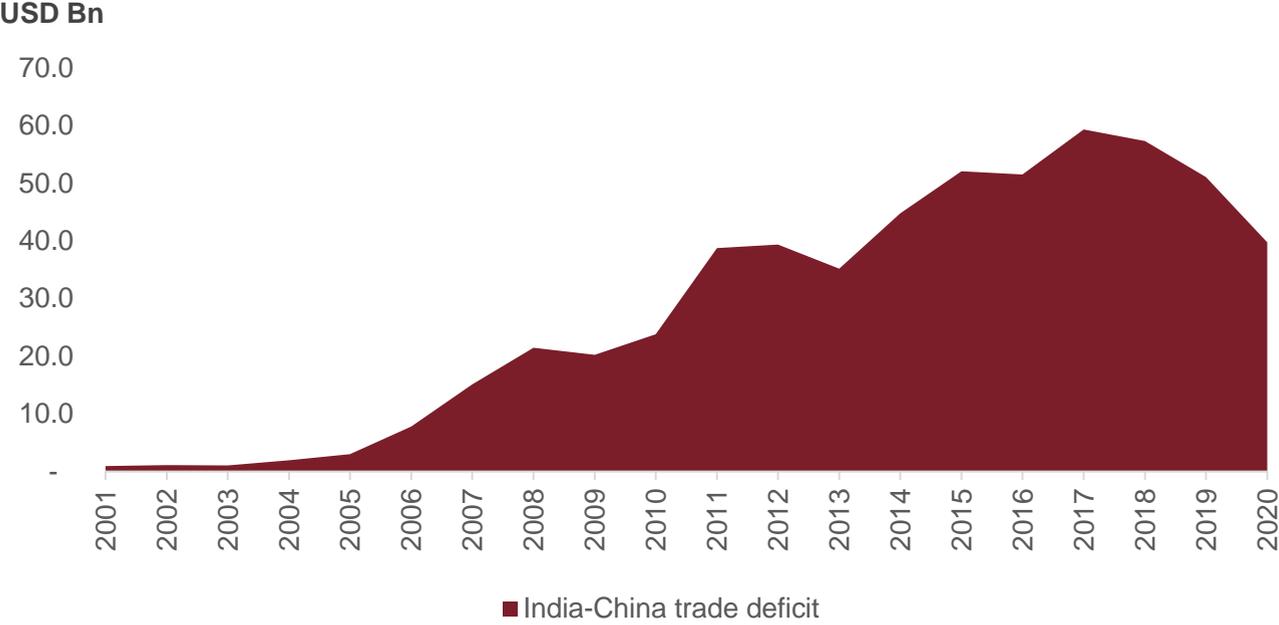
But country better placed in the services segment

Gap in market share between India and China almost doubled over 2 decades



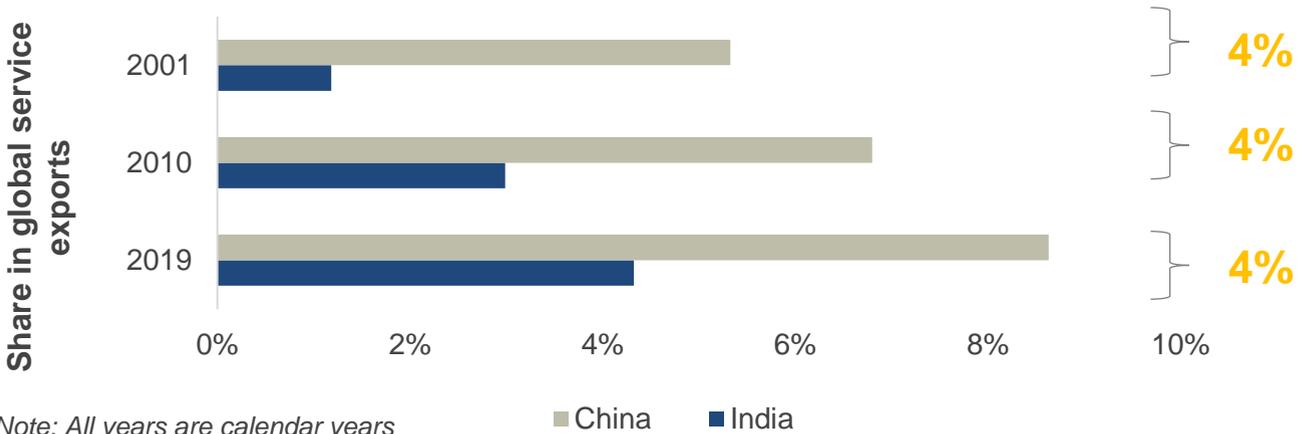
Note: China's exports includes exports within Macao, Hong Kong and China; Above share represents share of India and China in global trade

India-China trade deficit widened by over 40 times in past 2 decades



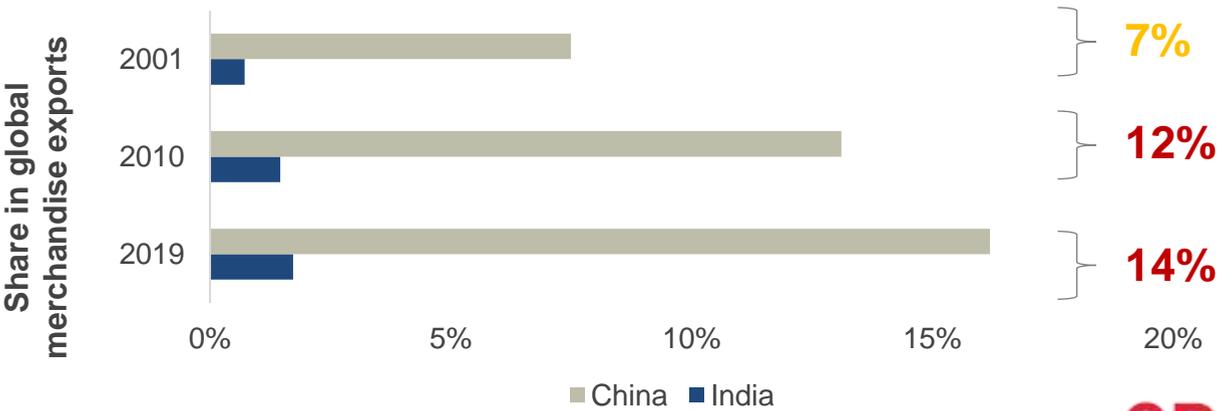
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Differential in share versus China persists



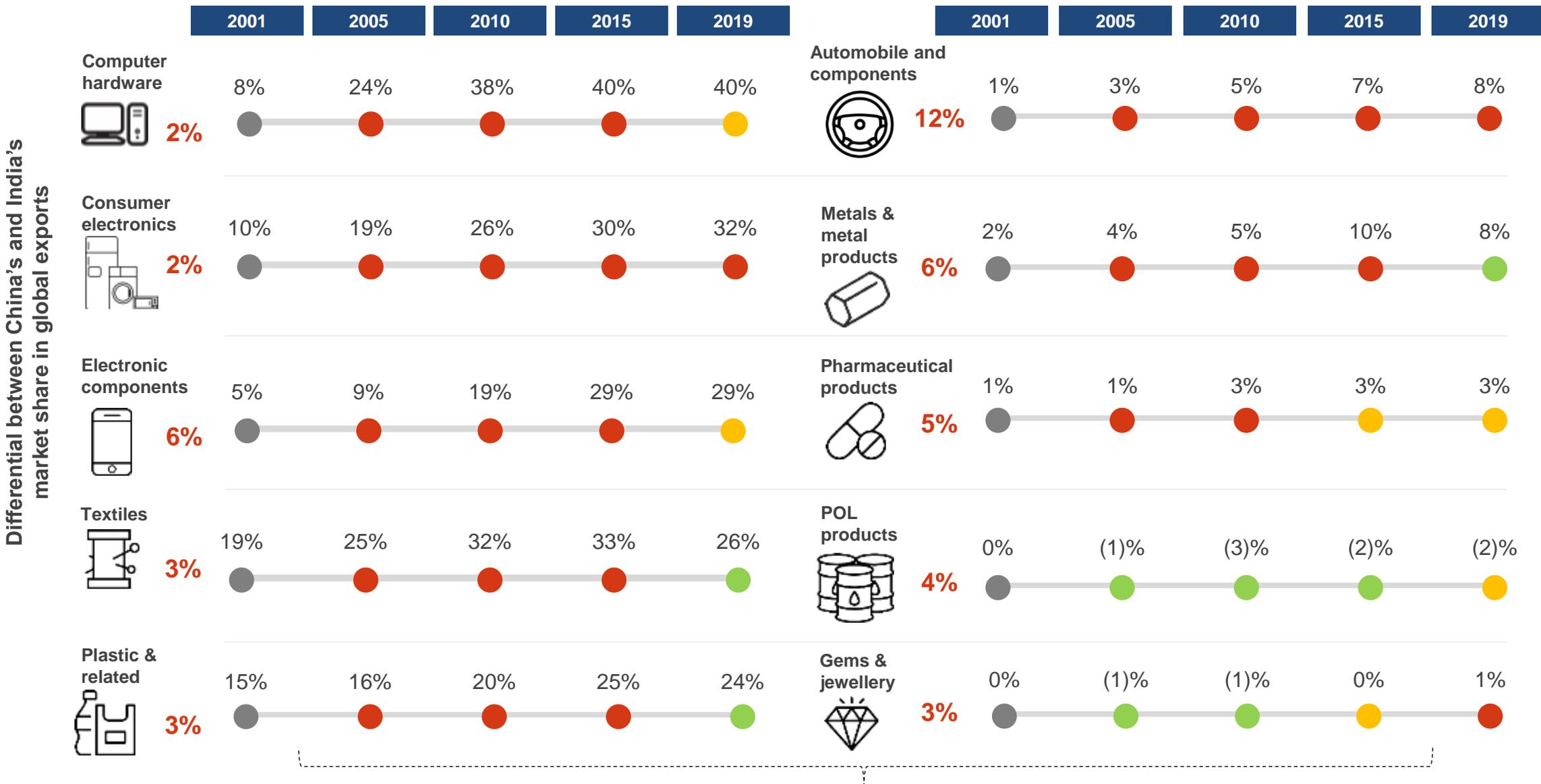
Note: All years are calendar years
Source: Trade Map, CRISIL Research

Differential in share versus China widens



India-China gap in share of world merchandise exports widened

In six out of the top 10 global segments, the differential between the two countries has widened materially



Verticals such as **computer hardware, consumer electronics, and electronic components** saw the highest loss of India's share to China, which focused on these segments amid rapidly rising mobile and internet penetration globally, along with economies of scale and access to better technology

In verticals such as **POL, pharmaceutical products, gems & jewellery, and textiles**, India has largely maintained its market share or even gained share from China

Figures next to icon represent % share of vertical in global trade in 2019 (pre-pandemic)

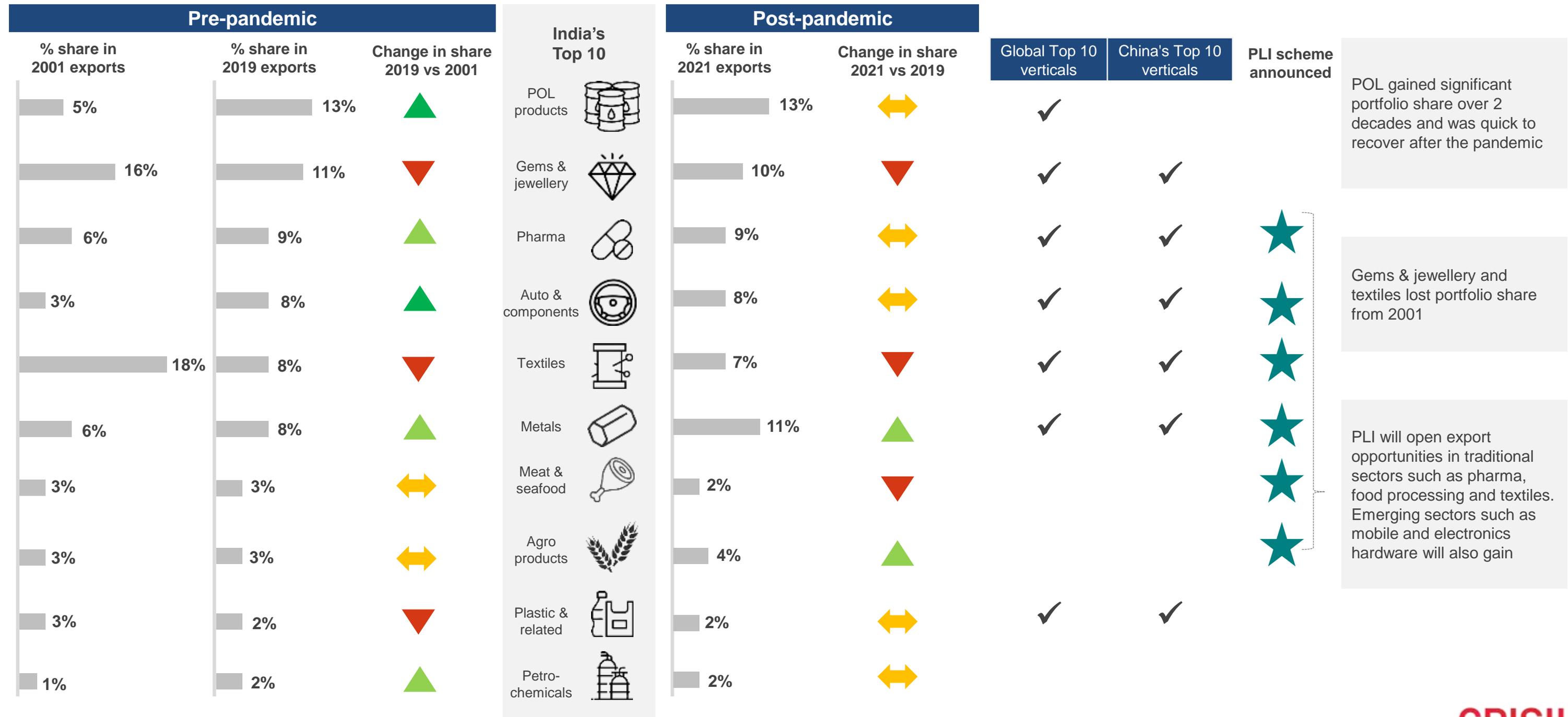
Top 10 verticals accounted for 45-50% of global trade in 2019 (pre-pandemic)

● Gap widened ● Gap reduced ● Gap retained

Note: Net exports for China. Exports between Hong-Kong, Macao and China are adjusted in overall exports
Source: Trade Map, Industry, CRISIL Research

Indian exports concentrated; top 10 verticals are ~70% vs <65% earlier

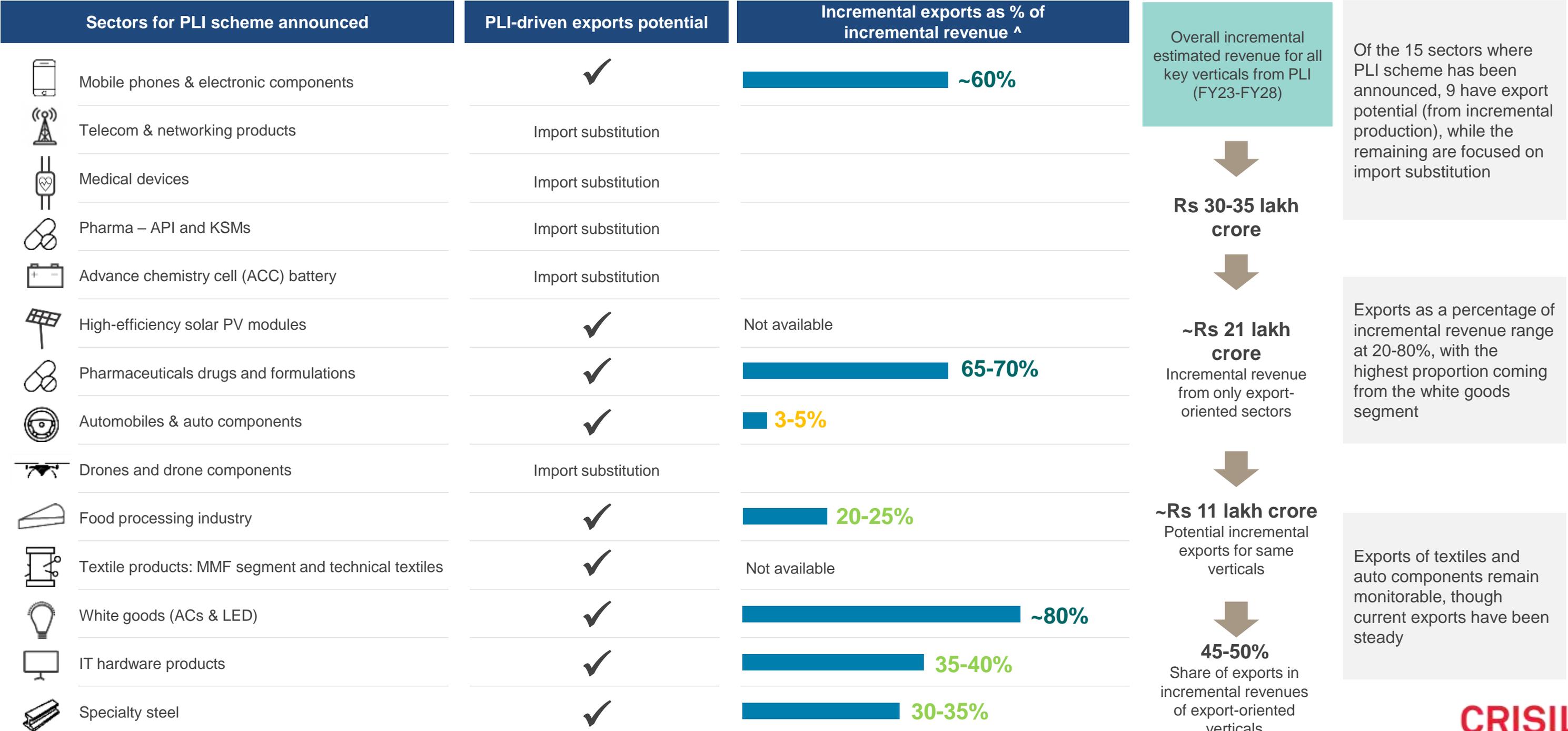
Six of India's top 10 verticals receive government attention via PLI



Note: Share of merchandise in overall exports is 60-65%; POL products largely include petroleum, oil and lubricants
 Source: Trade Map, DGFT, PLI documents, CRISIL Research

PLI scheme likely to propel incremental exports in key sectors

PLI can create annual exports opportunities of Rs 2 lakh crore over scheme period, at 5-7%*

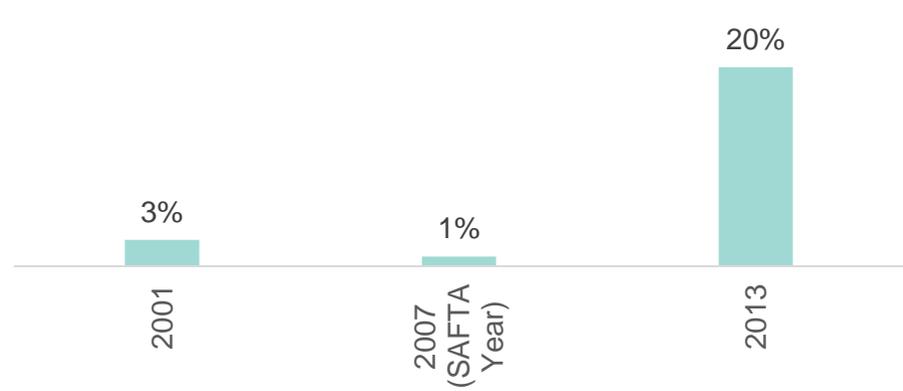


Note ^ figures are estimates as of end of PLI tenure; *Estimated on the basis of fiscal 2022 annual exports

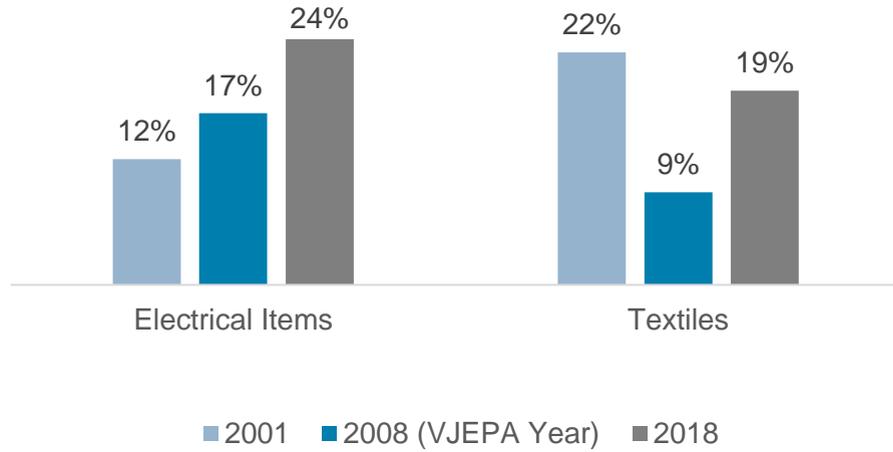
But PLI alone will not suffice; trade agreements can also be salutary

Upcoming negotiations with Australia, Canada will be crucial for India

 Bangladesh's textiles exports to India as a % of total exports to India after SAFTA 



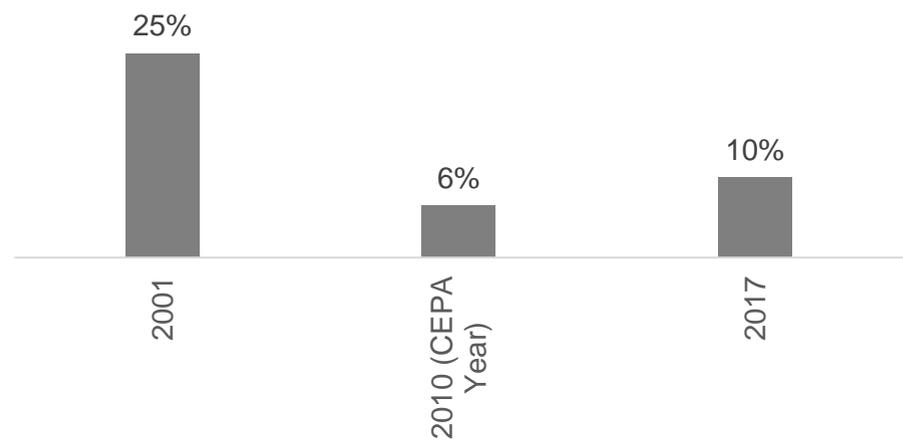
 Vietnam's exports of key categories to Japan as a % of total exports to Japan after VJEPA 



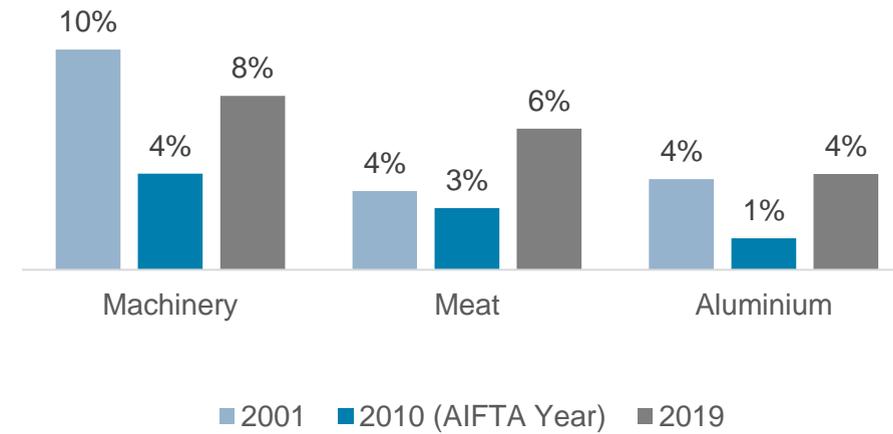
Emerging countries tend to benefit through trade agreements in key verticals/ items with high production capabilities and competitiveness

India has benefited in export of key commodities such as fish/ seafood, and metals to markets like Japan and ASEAN, but lost out to Vietnam in the textiles segment

 India's fish/ seafood exports to Japan as a % of total exports to Japan after CEPA 



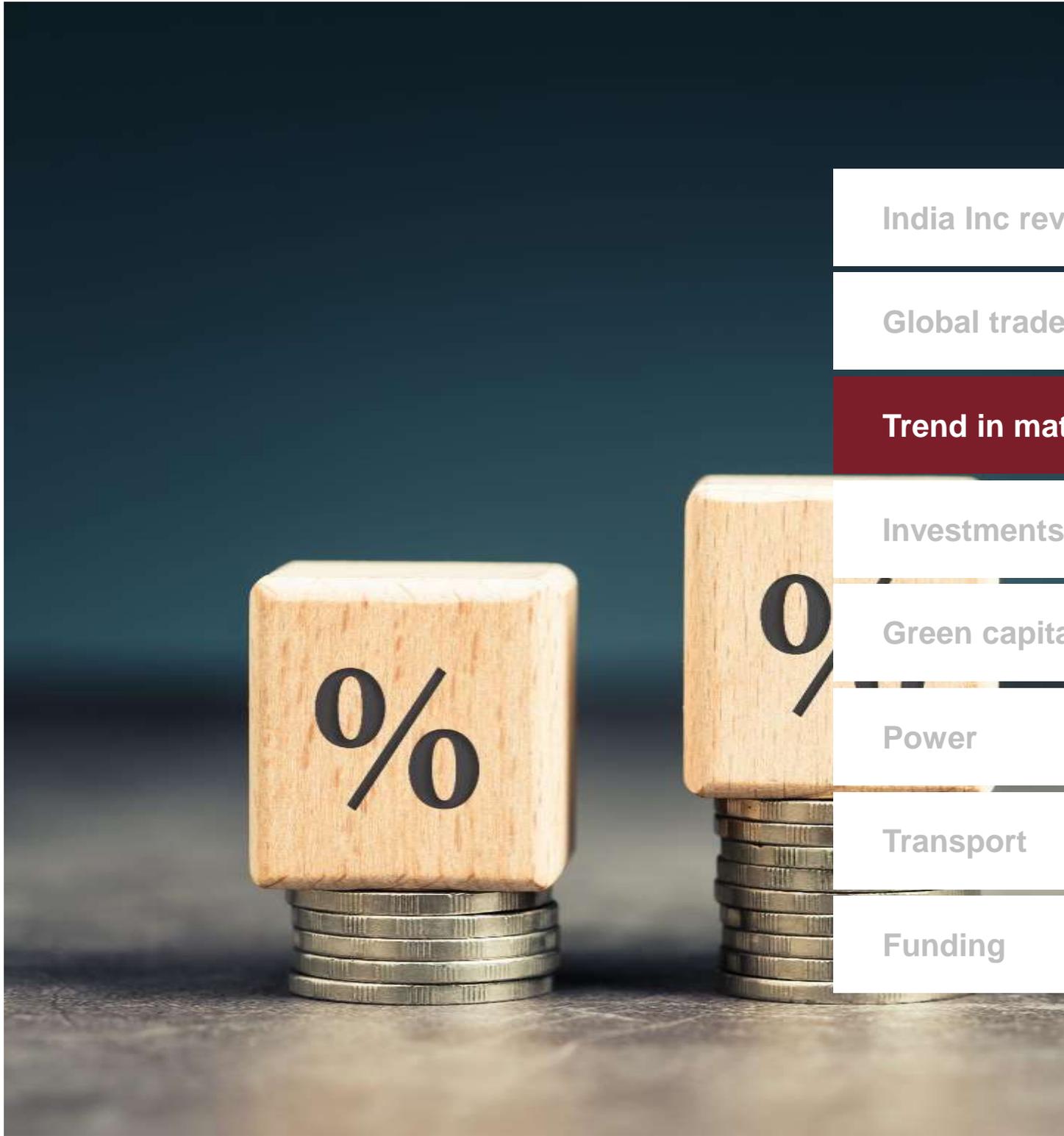
 India's exports of key categories to ASEAN as a % of total exports to ASEAN after AIFTA 



Following the recent agreement with UAE, 90% of India's exports to see zero duty — for products such as textiles, gems & jewellery, pharmaceuticals, automobiles, and plastic — a step in the right direction

Initiation of trade agreements with key markets critical for India's exports growth, especially given the PLI-driven incremental production

Note: SAFTA-South Asian Free Trade Area; VJEPA-Vietnam Japan Economic Partnership Agreement; CEPA-Comprehensive Economic Partnership Agreement; AIFTA-ASEAN-India Free Trade Area; ASEAN-Association of Southeast Asian Nations
 Source: Trade Map, CRISIL Research



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

Power

Transport

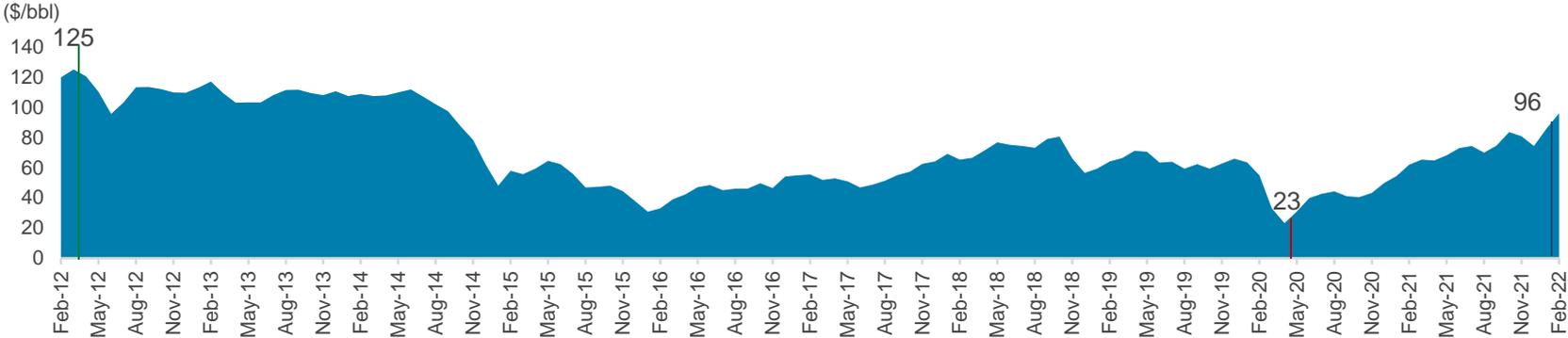
Funding

Energy commodities at decadal highs amid geopolitical tensions

Geopolitical risks not fully baked into the forecasts; upside risk persists

Energy

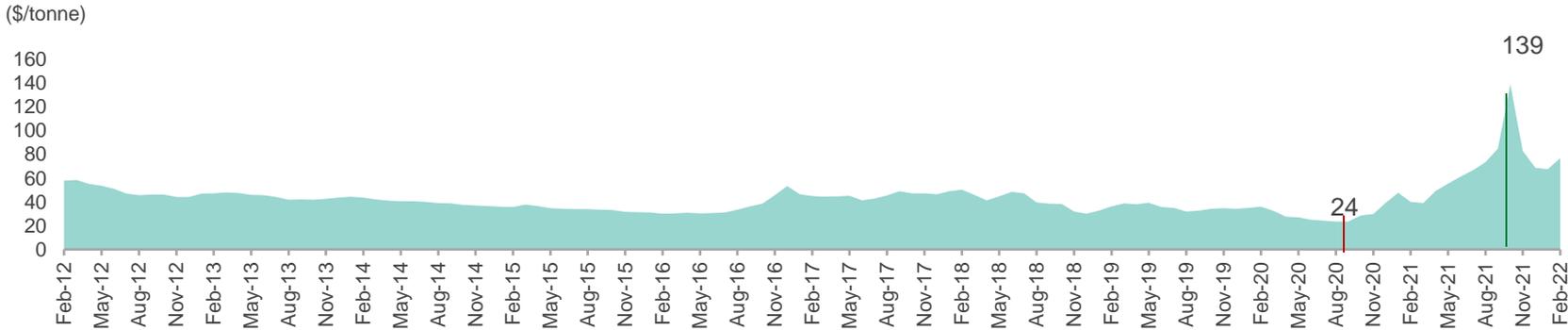
Crude oil: Average price to skyrocket to \$88-93 per barrel in 2022 due to the demand-supply tightness



CY21: 66%
 H1 CY22P: 50-55% H2 CY22P: 10-13%
 CY22P: 28-33%

- The war between Russia and Ukraine to weigh on demand-supply dynamics
- Production cuts by OPEC+ remain a key monitorable

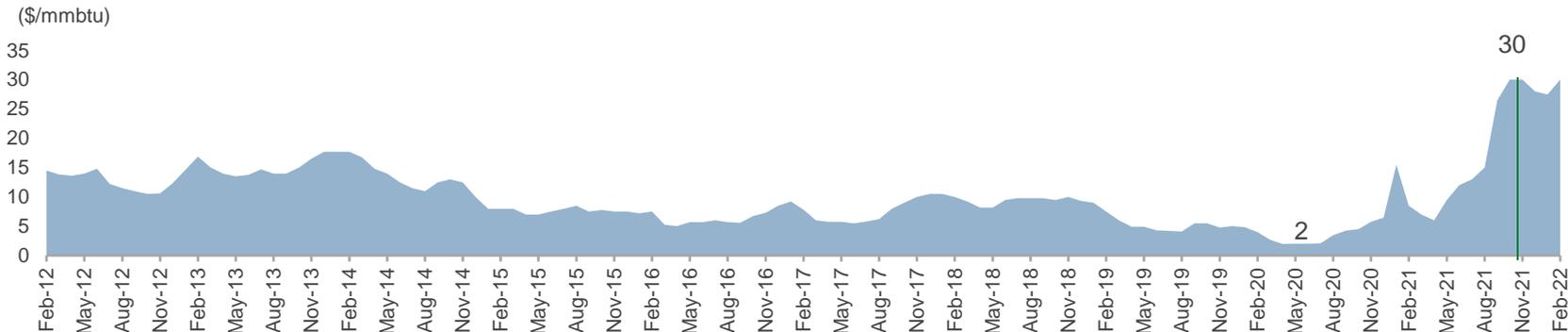
Non-coking coal: Prices remain high owing to supply constraints



CY21: 129%
 H1 CY22P: 115-120% H2 CY22P: (5-8)%
 CY22P: 35-40%

- Prices to remain elevated due to extreme weather conditions and covid-19 related labor shortages in key mining countries.
- To add to this, Russian coal supplies, which form 15% to 20% of global exports, remain uncertain

Natural gas: After reaching decadal high, prices to increase further amid geopolitical risks



FY22E: 320%
 H1 FY23P: 100-110% H2 FY23P: (10-15)%
 FY23P: 20-25%

- Lower inventory levels to keep gas prices high
- The Russia and Ukraine war remains the key monitorable

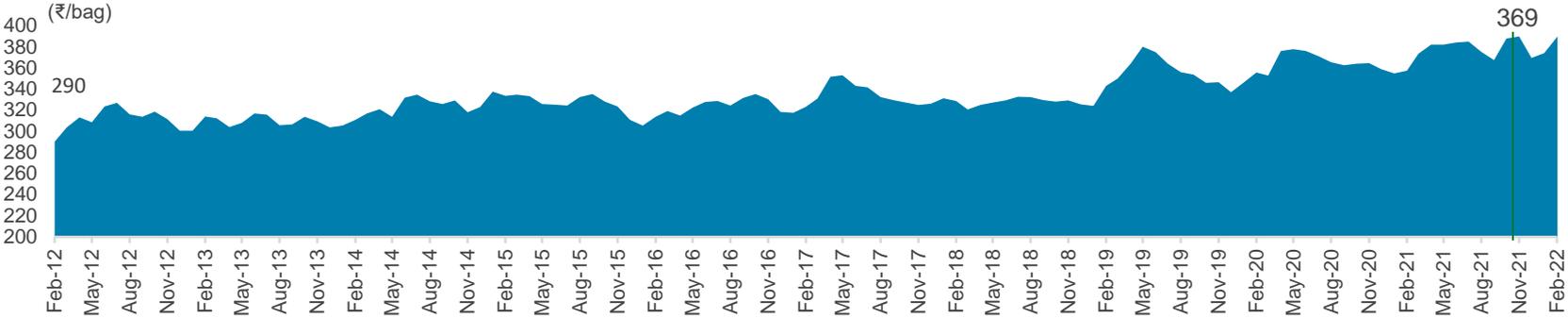
Note: E-estimated; P-projected
 Source: Industry, CRISIL Research

Metal prices to correct, but may stay elevated versus previous cycles

Chinese demand will continue to be crucial to price trend

Metals

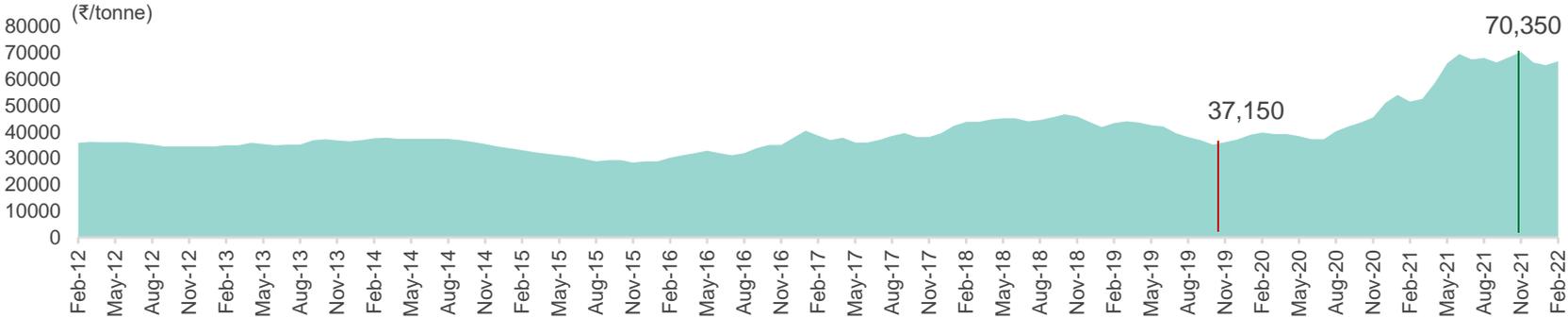
Cement: Prices expected to increase further in fiscal 2023 after reaching an all-time high in fiscal 2022



FY22E: **3%**
 H1 FY23P: **3-5%** H2 FY23P: **3-5%**
 FY23P: **3-5%**

- Prices to remain high next fiscal as companies pass on the rise in power, fuel and freight costs to consumers amid healthy demand growth

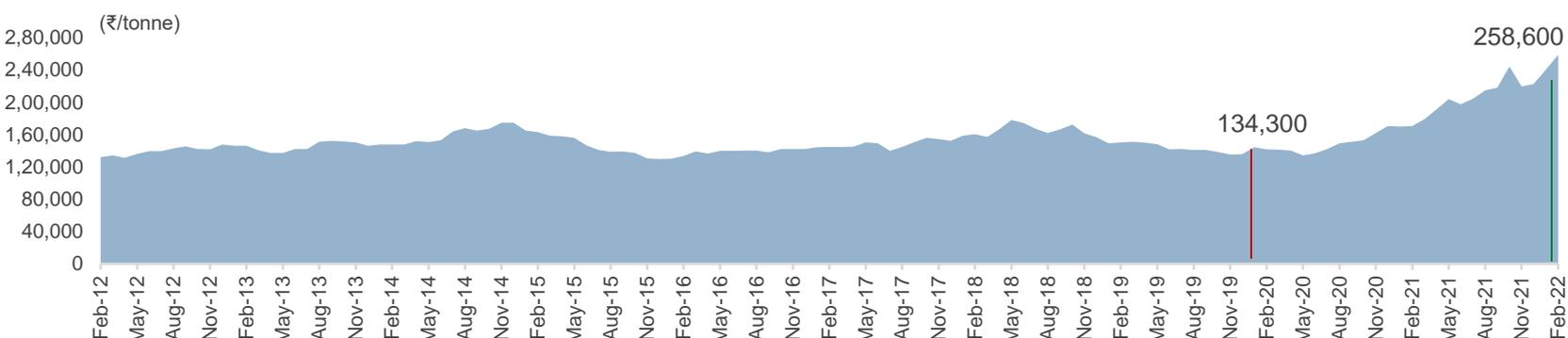
Steel: Prices shoot up driven by global price rally, some correction expected in fiscal 2023



FY22E: **51%**
 H1 FY23P: **3-5%** H2 FY23P: **(8-10)%**
 FY23P: **(2-4)%**

- Despite subdued domestic demand, prices are expected to remain high in the near term, as higher inputs costs are passed on due to supply issues amid the Russia-Ukraine conflict
- Supply cuts by China would be a monitorable, going ahead

Aluminum: Supply concerns will keep prices high in first half of fiscal 2023



FY22E: **41%**
 H1 FY23P: **14-18%** H2 FY23P: **(11-15)%**
 FY23P: **(1)-1%**

- Supply concerns likely to ease in the second half of next fiscal

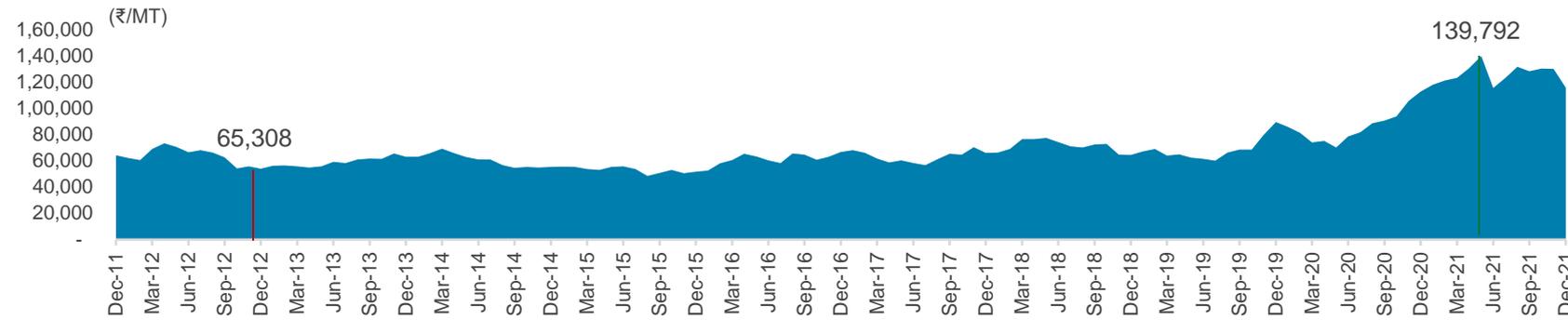
Note: E-estimated; P-projected
 Source: Industry, CRISIL Research

Volatility in agri commodities, stock correction to keep prices elevated

Geopolitical tension to weigh on prices in the near term

Agricultural products

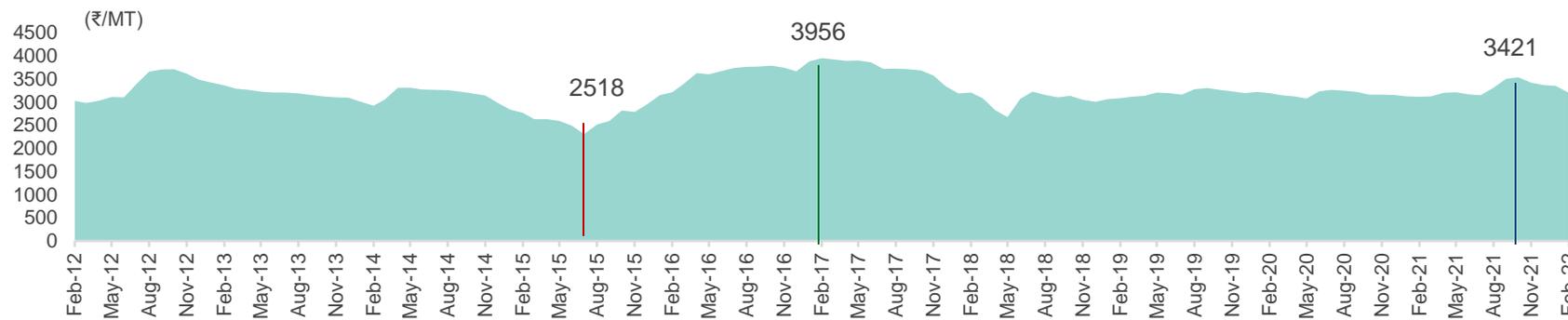
Edible oil: Palm oil prices likely to decline next fiscal after reaching decadal highs



FY22E: 34%
H1 FY23P: 12-14% **H2 FY23P: (18-20)%**
FY23P: (4-6)%

- Prices are expected to decline following healthy global palm oil production, higher sunflower oil stocks in Ukraine and Russia, geopolitical strife, and labour issue in Malaysia

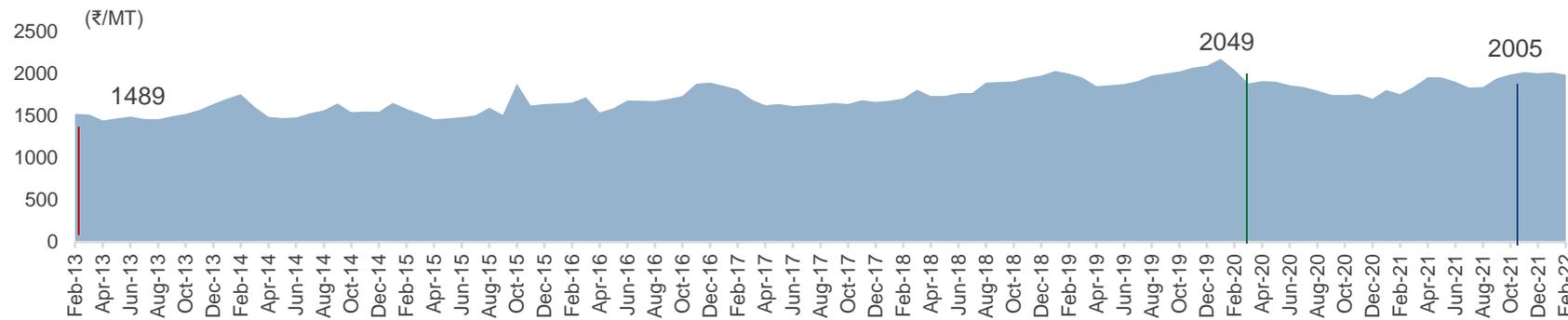
Sugar: Diversion of sugarcane towards ethanol production to keep sugar prices elevated



FY22E: 3%
H1 FY23P: 7-10% **H2 FY23P: 2-5%**
FY23P: 5-8%

- Prices to inch up as domestic offtake is expected to rise with industries operating at full capacities. However, we estimate a slower rise in the second half following a slowdown in exports, moderation in global sugar prices, and expected piling up of domestic inventories

Wheat: Expected lower production and higher export demand to keep wheat prices high



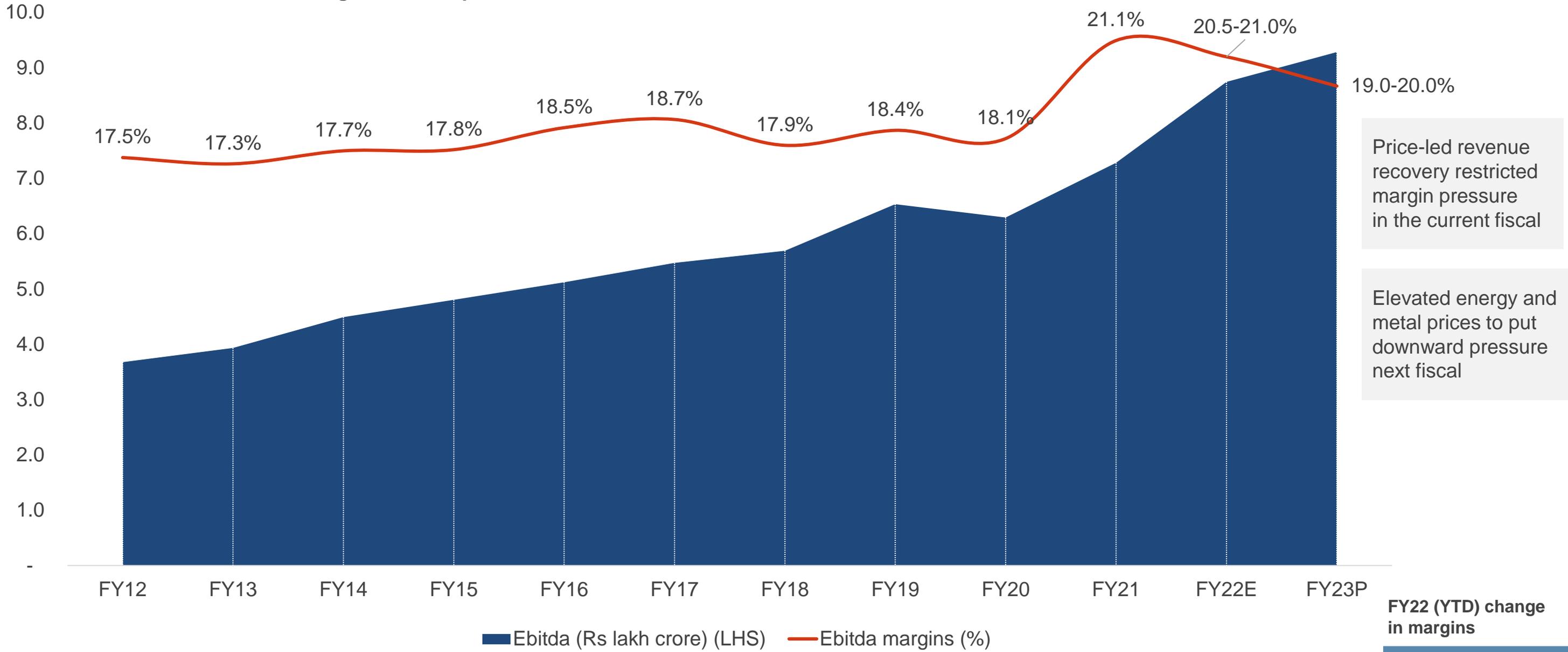
FY22E: 8%
H1 FY23P: 3-5% **H2 FY23P: (1)-1%**
FY23P: 2-4%

- Wheat exports are likely to be propelled by Russia-Ukraine (together accounting for ~30% of global exports) conflict, especially in the first half of next fiscal. Further, lower closing stock will keep prices elevated

Note: E-estimated; P-projected
 Source: Industry, CRISIL Research

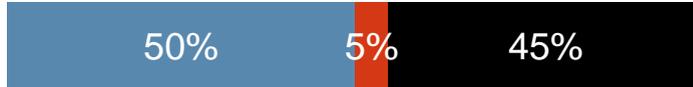
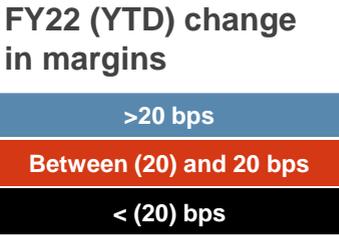
All-time high margins sustained this fiscal, but will moderate next fiscal

Margins of oil-dependent and construction-linked industries set to contract



Price-led revenue recovery restricted margin pressure in the current fiscal

Elevated energy and metal prices to put downward pressure next fiscal



% of number of companies by margin expansion/contraction (596 Companies) for 9M FY22

Note: Figures represent revenue data for ~740 listed corporates excluding oil & gas, and BFSI; list includes 640 companies assessed at the consolidated level and ~100 companies at the standalone level; P-projected; E-estimated
Source: Company reports, Industry, CRISIL Research

Elevated commodity prices to weigh on margins in key sectors

Improving demand scenario to allow companies in paints, tyres and airlines to partially pass on cost hike

Share in overall Ebitda			FY11-FY13			FY17-FY19		FY22E		FY23P	
			Crude oil price increase	28%	43%	78%	Impact of commodity price change in FY23		10-15%	(4-6)%	
	Sectors	Raw material dependency on commodities as % sales	Dependency on logistics (freight) as % sales	Margin movement (bps) during previous periods^			Energy	Metals	Margin FY23 expectations		
2-4%		Chemicals	60-70%	2-5%	(200)	(10)	(160)	●		↓	
0.5-1.5%		Paints	50-60%	5-7%	(148)	(77)	(500)	●		↔	
0.5-1%		Tyres	60-70%	4-6%	(20)	(267)	(560)	●		↑	
0-0.5%		Airlines*	35-45%	N.M	(1,800)	(1,000)	887	●		↑	
0-1%		Transport operators	45-55%	N.M	(200)	(394)	300	●		↓	
10-11%		Steel	50-55%	3-6%	(385)	122	350	●	●	↓	
2-3%		Cement	23-28%	28-30%	60	(152)	(455)	●		↓	
0-1%		Aluminium	20-25%	5-8%	(150)	(250)	1,150	●	●	↓	
1-2%		Cars	57-62%	2-4%	(253)	(215)	(100)	●	●	↑	
1-2%		Two-wheelers	70-75%	2-4%	(136)	(271)	(103)	●	●	↑	
0.1-0.6%		Ceramics	45-50%	1.5-2.5%	(40)	(297)	(181)	●		↔	

Impact of commodity price on margins

● Unfavourable
● Favourable

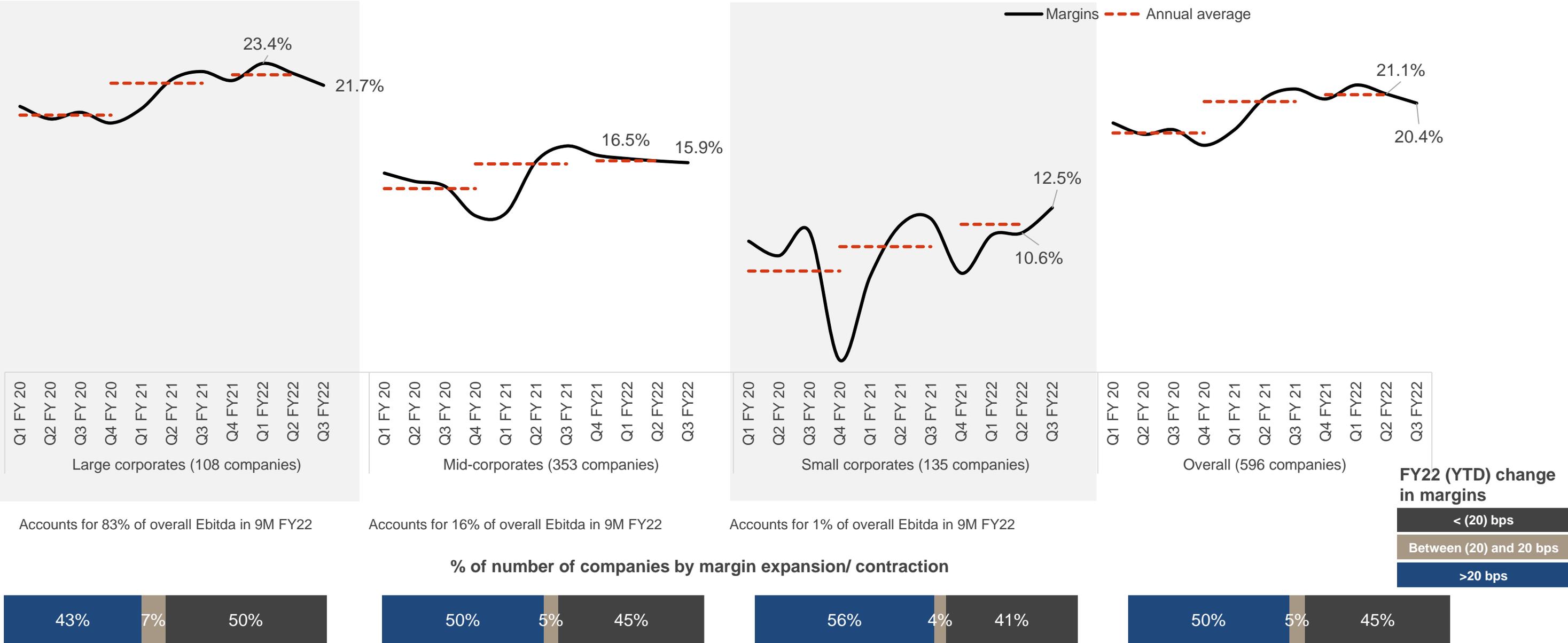
Change in FY23 margin over FY22

↓ <50 bps
↔ (50) to 50 bps
↑ >50 bps

Note: ^ Previous period indicates tenure of FY11 to FY13 and FY17-FY19 when crude oil prices increased significantly; E-estimated; P-projected; *Sharp jump in FY23 margins attributable to airline traffic returning almost to pre-pandemic levels in absence of any further covid waves; N.M-Not meaningful
Source: Company reports, Industry, CRISIL Research

Ebitda margins show most players pass on higher raw material prices

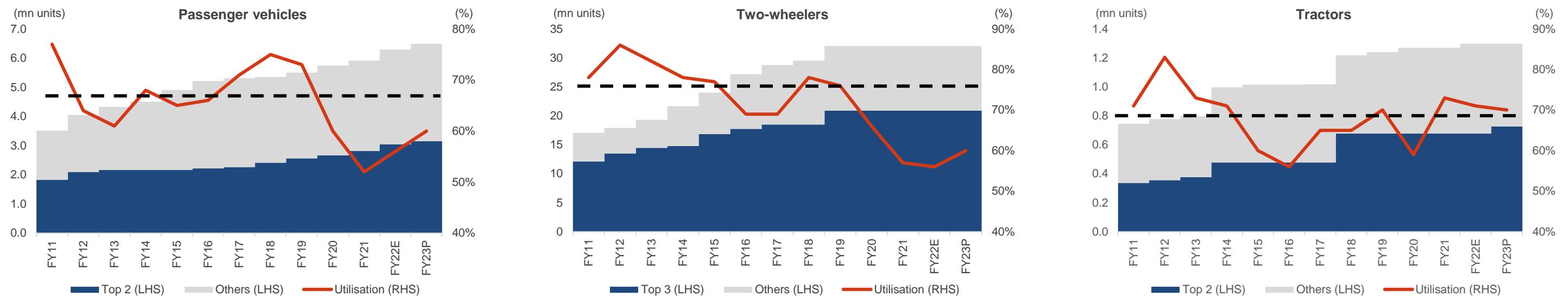
Year-to-date margins remain range bound, but sequential trend indicates pressure is building up



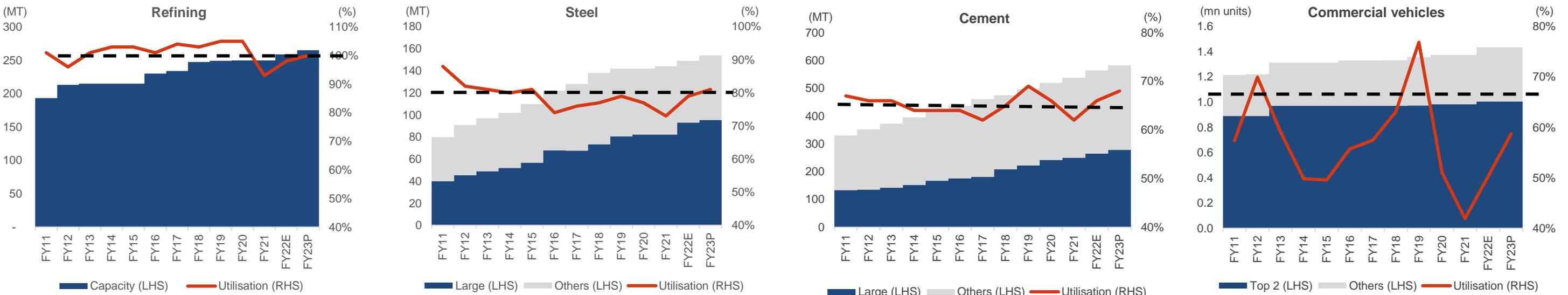
Note: Large players are defined as those with an annual revenue of over Rs 5,000 crore, mid-sized are those with annual revenue of Rs 500 to 5,000 crore, and small players are those with annual revenue of Rs 500 to 250 crore; Period for 9M FY22 refers to April-December 2021
 Source: Company reports, CRISIL Research

Large companies drive capacity addition in most sectors

Utilisation levels for PVs, TWs and tractors to be below previous peaks due to supply-chain constraints and muted recovery



Utilisation levels for infrastructure-linked companies have rebounded strongly, in line with economic recovery

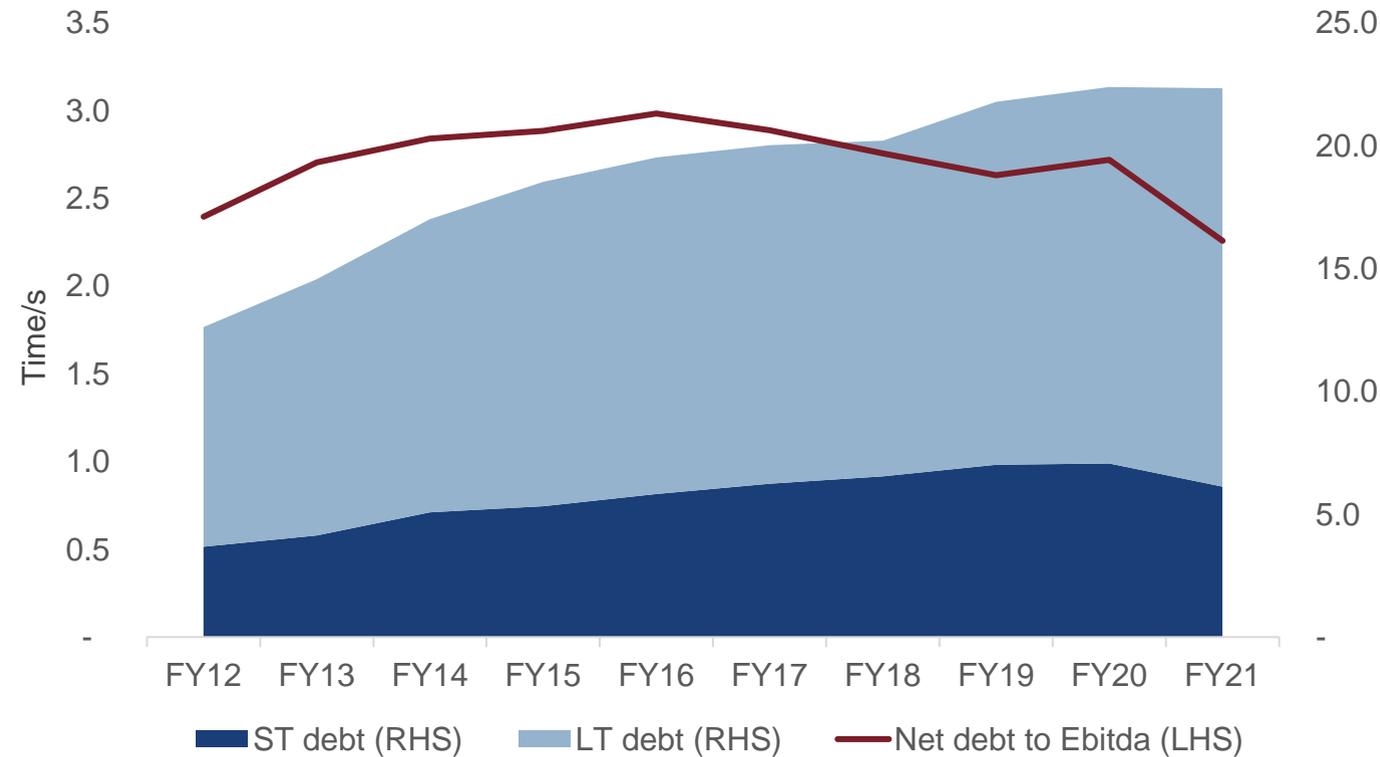


Note: Utilisation levels are provided for industry in the coloured space; for CV, it's for the top four players accounting for more than ~80% of volumes; CV-commercial vehicle; PV-passenger vehicle; TWs-Two-wheelers; MT-million tonne Source: SIAM, TMA, Industry, CRISIL Research

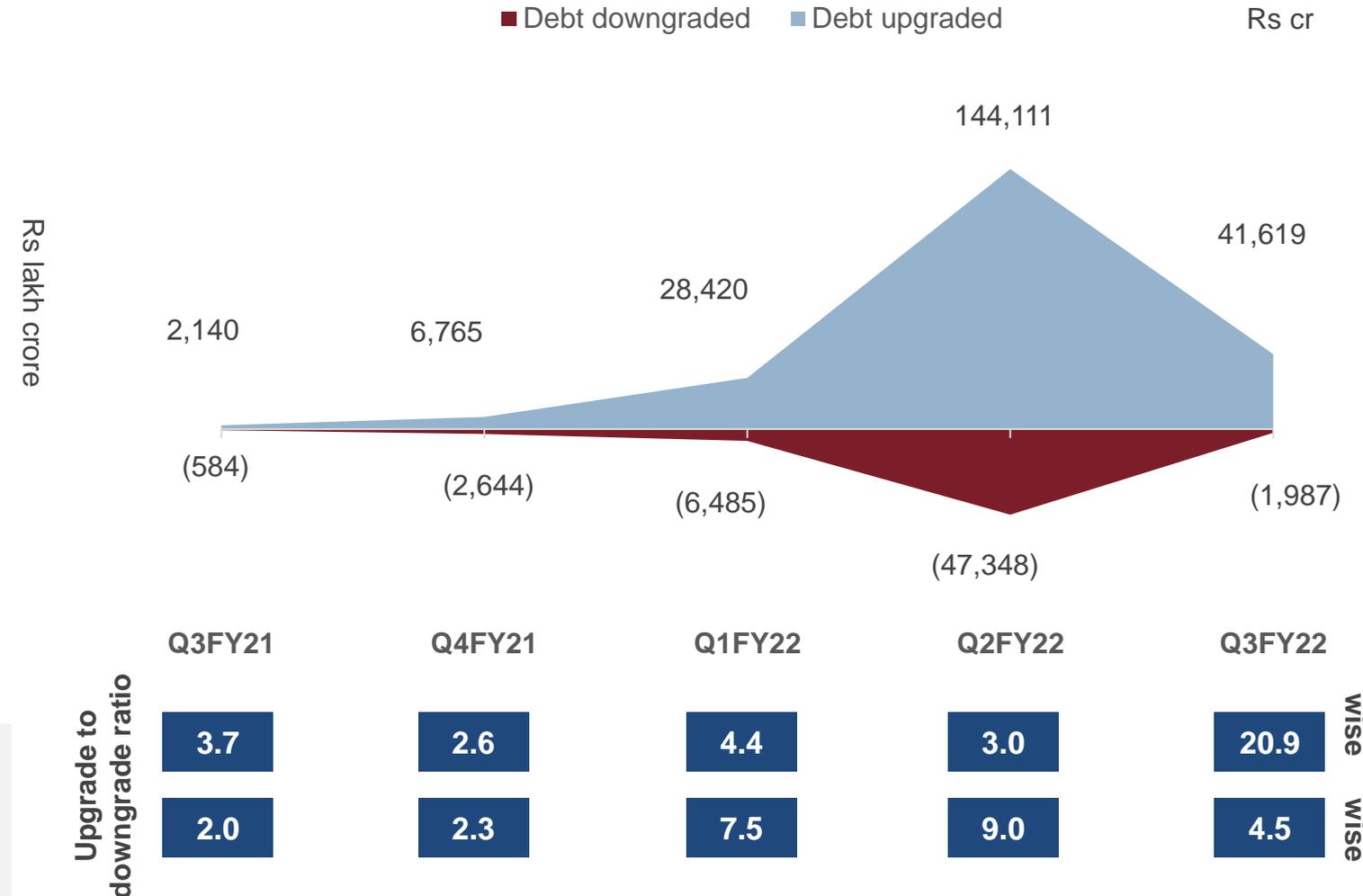
Better profitability helped large corporates improve financial risk profile

Balance sheets of India Inc augur well for the capex cycle

Two-thirds of companies saw net debt reduce in FY21



Deleveraging helped improve credit profiles in India Inc



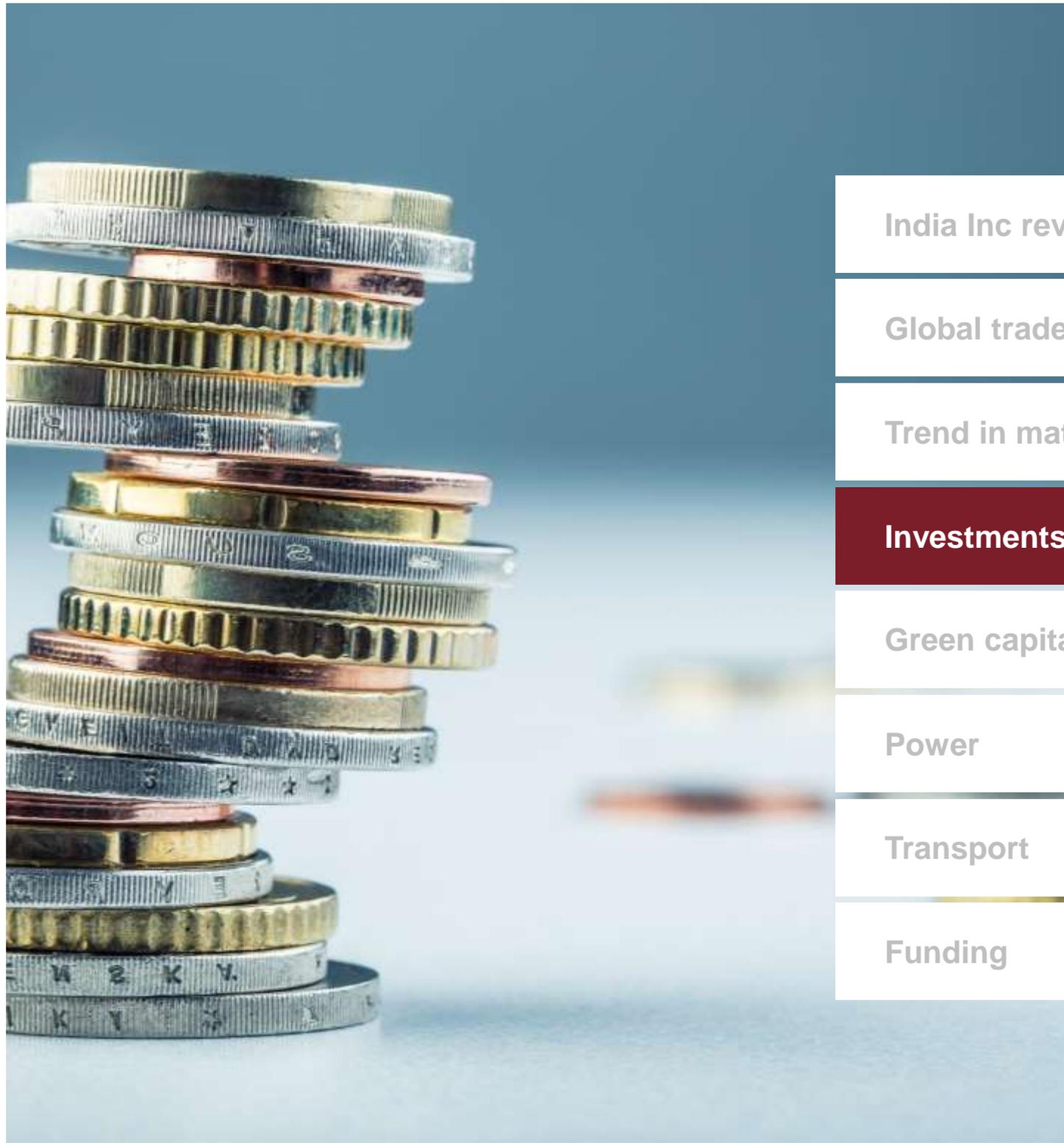
Coverage enhanced due to reduced borrowing, lower funding cost and enhanced margin

Interest coverage for the sample improved to 4.1 times compared with the last five years' average of 3.3 times

Large companies in metals sector saw upgrades in Q2 FY22. However, the credit ratio in the quarter was impacted by downgrade of a large company in the telecom sector

Note: Net debt to Ebitda analysed based on the performance of ~740 companies (barring BFSI, and oil & gas)
Source: Quantix, Industry, CRISIL Research

Note : All rating agencies considered, excludes rating cases of 'issuer not co-operating' and outstanding 'suspended' ratings
Source: Quantix, Industry, CRISIL Research



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

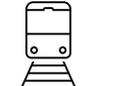
Power

Transport

Funding

Investments pick up across sectors; PLI drives private capex

NIP achievement seen at 70% through fiscal 2025; share of the power sector to rise to ~18% by that year

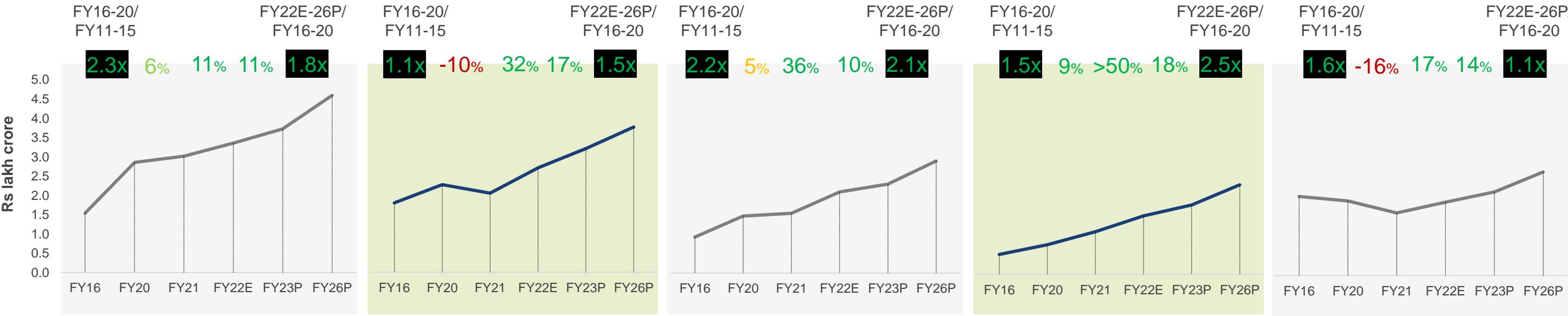
Sector	FY16-FY20 CAGR	FY21E Rs lakh crore	FY22E	FY23P	FY22E-26P/ FY16-20	Source of funds (FY22E)
 Infrastructure (A)	8%	9.2-9.4	23-25%	12-15%	1.7x	46% Centre, 39% State, 15% Private
 Roads	17%	3-3.1	10-11%	10-12%	1.8x	49% Centre, 39% State, 12% Private
 Power	6%	2-2.1	30-32%	17-19%	1.5x	34% Centre, 45% State, 21% Private
 Railways	12%	1.55	35-37%	8-10%	2.1x	91% Centre, 3% State, 6% Private
 Urban infrastructure	11%	1.1-1.2	36-38%	17-19%	2.8x	36% Centre, 61% State, 3% Private
 Other infrastructure	-1.5%	1.6-1.7	16-18%	13-15%	1.0x	13% Centre, 53% State, 34% Private
 Industrial (B)	6%	2.9-3.1	32-35%	14-16%	1.4x	37% Centre, 63% Private
 Total investments (A+B)	8%	12.2-12.4	25-27%	14-16%	1.6x	44% Centre, 29% State, 27% Private

Centre
State
Private

Note: E-estimated, P-projected; NIP-National Infrastructure Pipeline
Source: CRISIL Research

Healthy growth in infrastructure investments seen through fiscal 2026

Urban infrastructure to see fastest growth, led by rapid urbanisation



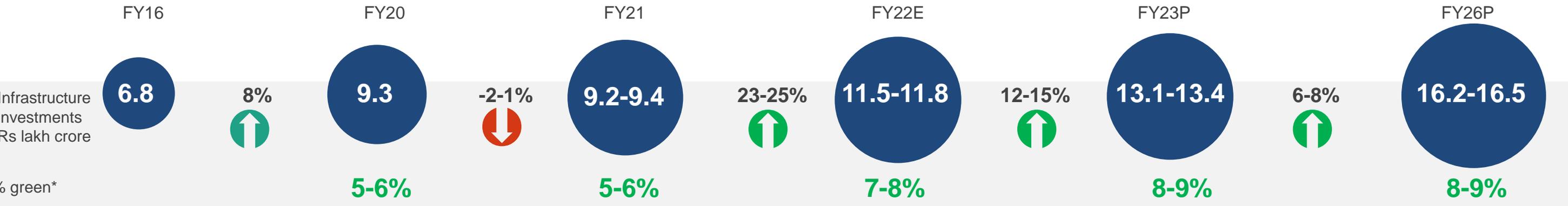
Expressways to drive investments over FY22-26 on a high base; NHAI construction seen ramping up

Renewables to drive growth over the medium term to meet the ambitious 2030 target of 500 GW

Traditional areas – electrification, track doubling, coupled with new avenues such as DFCs and HSRs

Rising urbanisation to drive investments; sharp rise in central budget allocations for WSS; metro rail length seen doubling by 2026

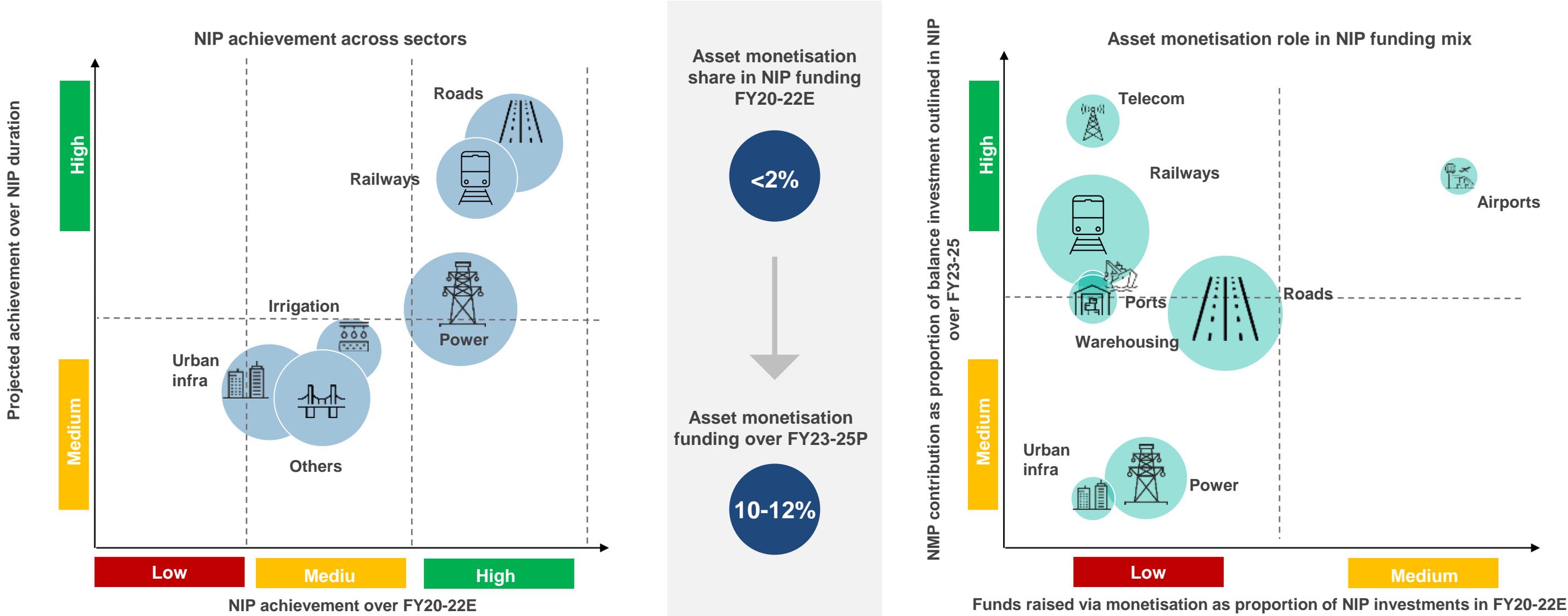
Investments in airports to double; interest-free funds for capex to states provided by the Centre to boost irrigation investments



Note: *Proportion of green investment as a percentage of infrastructure investments; E-estimated; P-projected; Other infra includes network capex, telecom towers, irrigation, airports, warehousing, and oil & gas pipeline
Source: CRISIL Research

Roads and railways outperformed other sectors in fiscals 2020-2022

Trend likely to continue through the NIP execution period



- Current high achievement ratio for roads and railways to continue over the duration of NIP
- State dominated sectors, Irrigation, Others, urban infra showed sedate progress; capex seen Improving over the balance three years of NIP

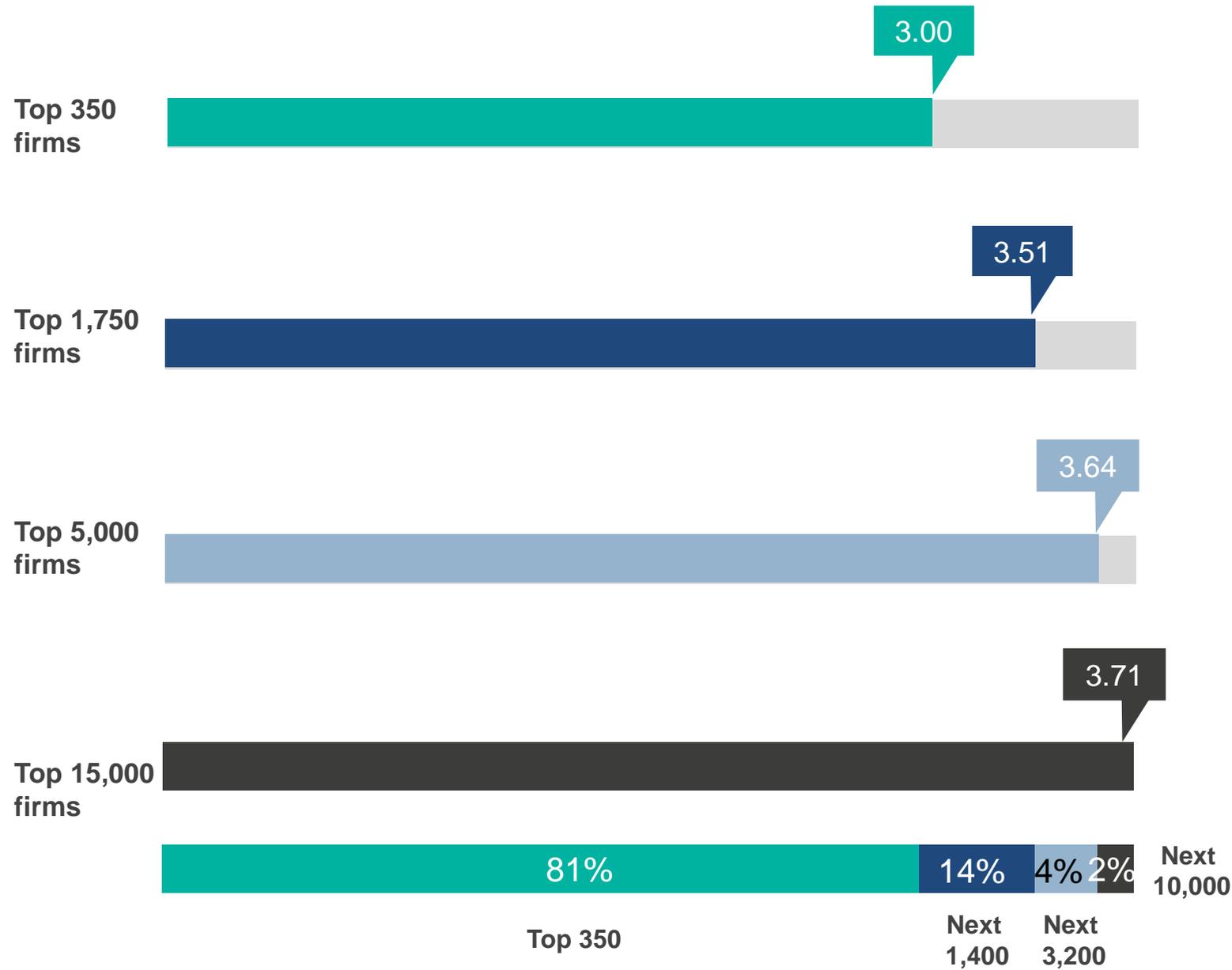
- Assets successfully monetized across Airports, Power transmission, Power distribution and Roads and highways sector in fiscals 2020-22
- Airport sector projected to continue outperformance over the NMP duration due to the well-established PPP model; roads segment follows close behind

Note: Size of the bubble indicates capex laid out for the sector in the NIP document; Others includes rural infra, social infra, ports, airports and digital communications; Achievement over FY20-22 and projected over FY20-25: High: >66%, Medium: 33-66%, Low: <33%; E-estimated; P-projected; Source: India Investment Grid, NIP documents, CRISIL Research

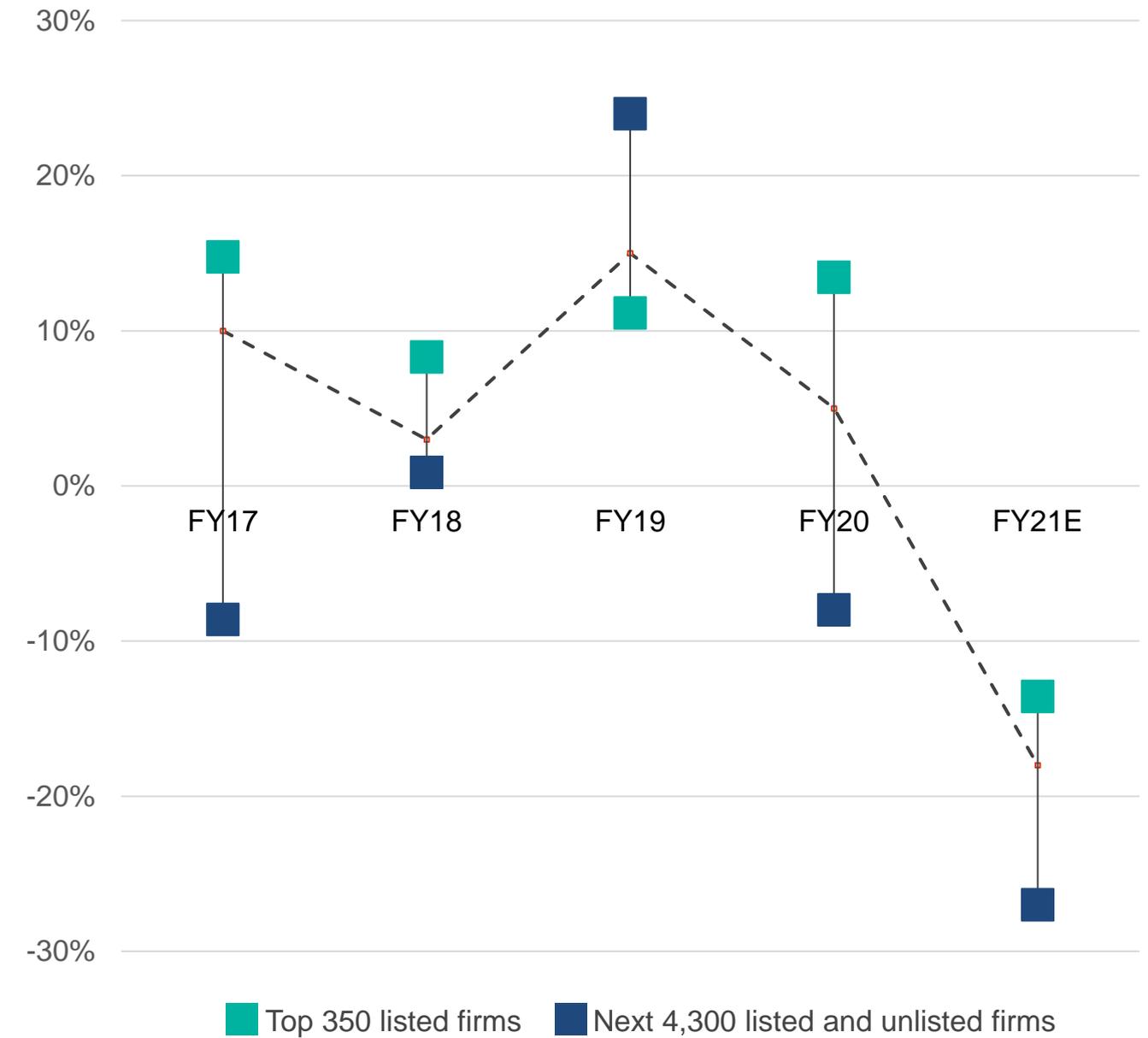
Note: Size of the bubble indicates percentage share of the sector in the overall NMP; Not all sectors of NMP are present in the NIP (for instance, mining); Y-axis : High: >18%, Medium: <18%; X-axis : Low<5%, Medium : >5%; Source: National Monetisation Pipeline Document, CRISIL Research

Top 350 firms accounted for 81% of capex; large firms spending more

Manufacturing firms spent Rs 3.71 lakh crore on capex in FY20



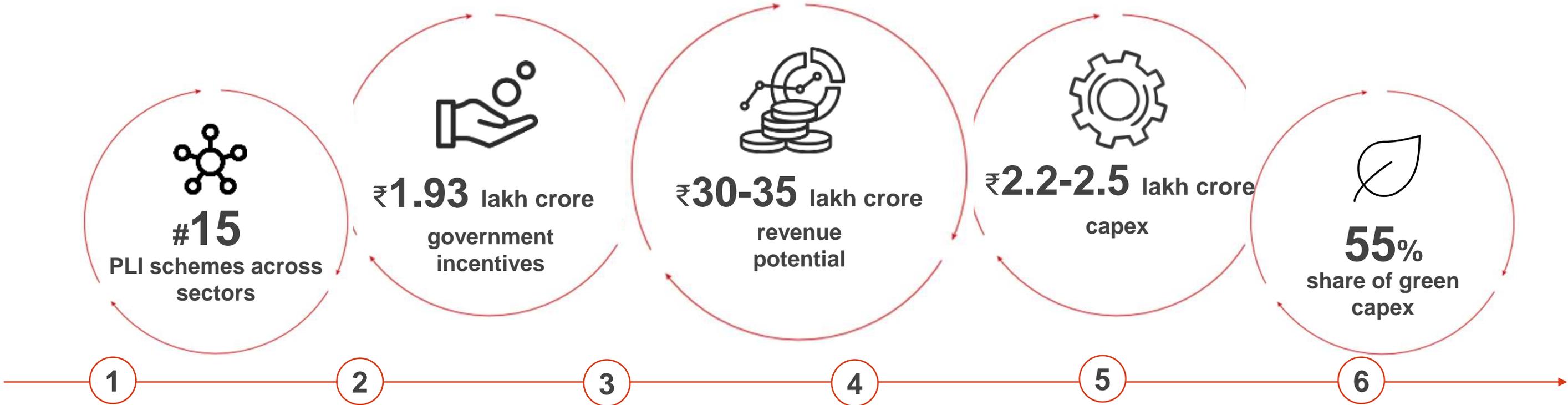
Capex differential between small and large firms widened



Source: CRISIL Quantix, CRISIL Research

PLI scoreboard so far: Capital-intensive sectors yet to take off

Of the potential capital expenditure under the scheme, only 22% has kicked off



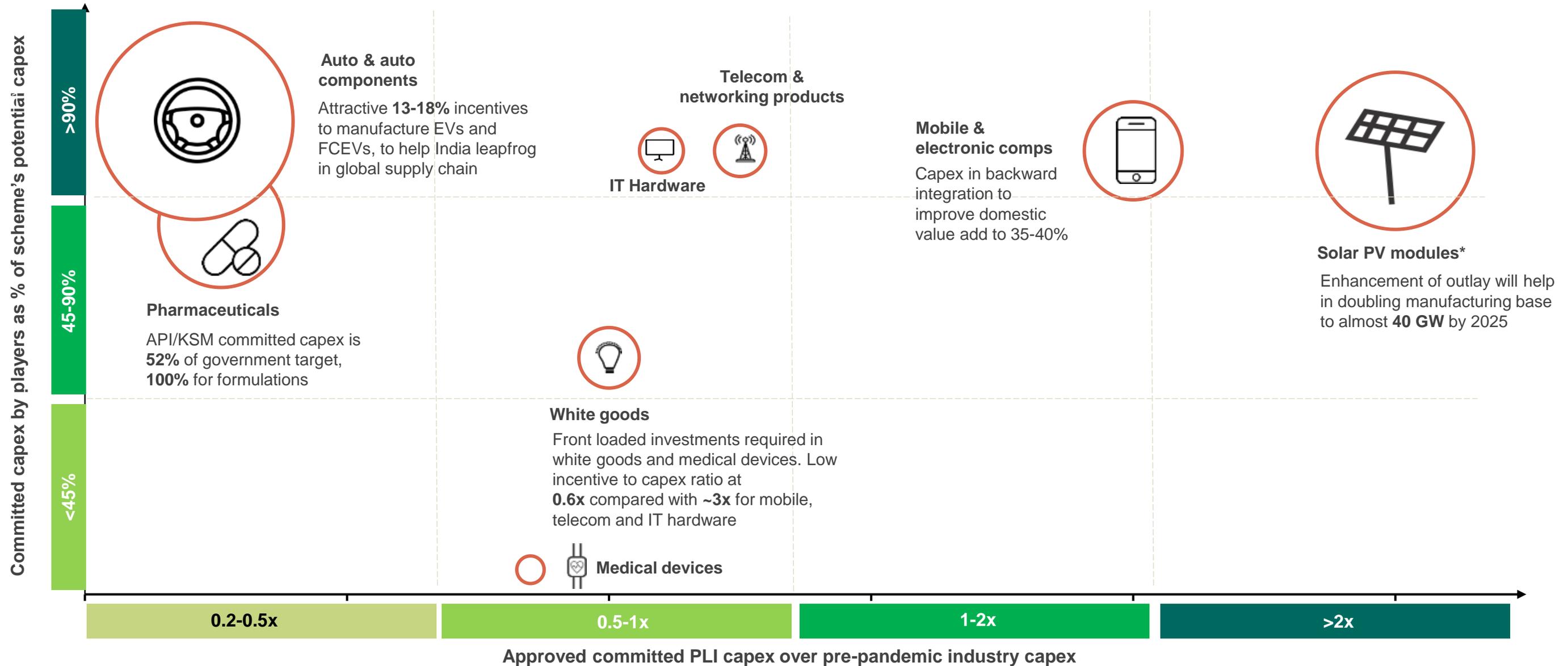
	1 Announcement	2 Cabinet approval	3 Gazette notified	4 Applications invited	5 Applications approved	6 Scheme kick-off
Number of schemes	15/15	15/15	14/15	14/15	10/15	7/15
Govt incentives	100%	100%	97%	97%	79%	48%
Potential capex	100%	100%	99.6%	99.6%	55%	22%

Solar PV, auto, ACC battery, specialty steel and textiles yet to kick off

Note: Status as of March 8, 2022
Source: Union Cabinet, Ministries, PIB, CRISIL Research

Auto and solar account for 65% of the capex committed under PLI

Analysis of 9 approved schemes shows healthy commitment for most, barring medical devices, white goods and pharma API



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Note: Size of the bubble is the committed capex by players approved under the scheme so far; Status as of March 8, 2022; based on schemes that have approved applicants and respective committed investments.

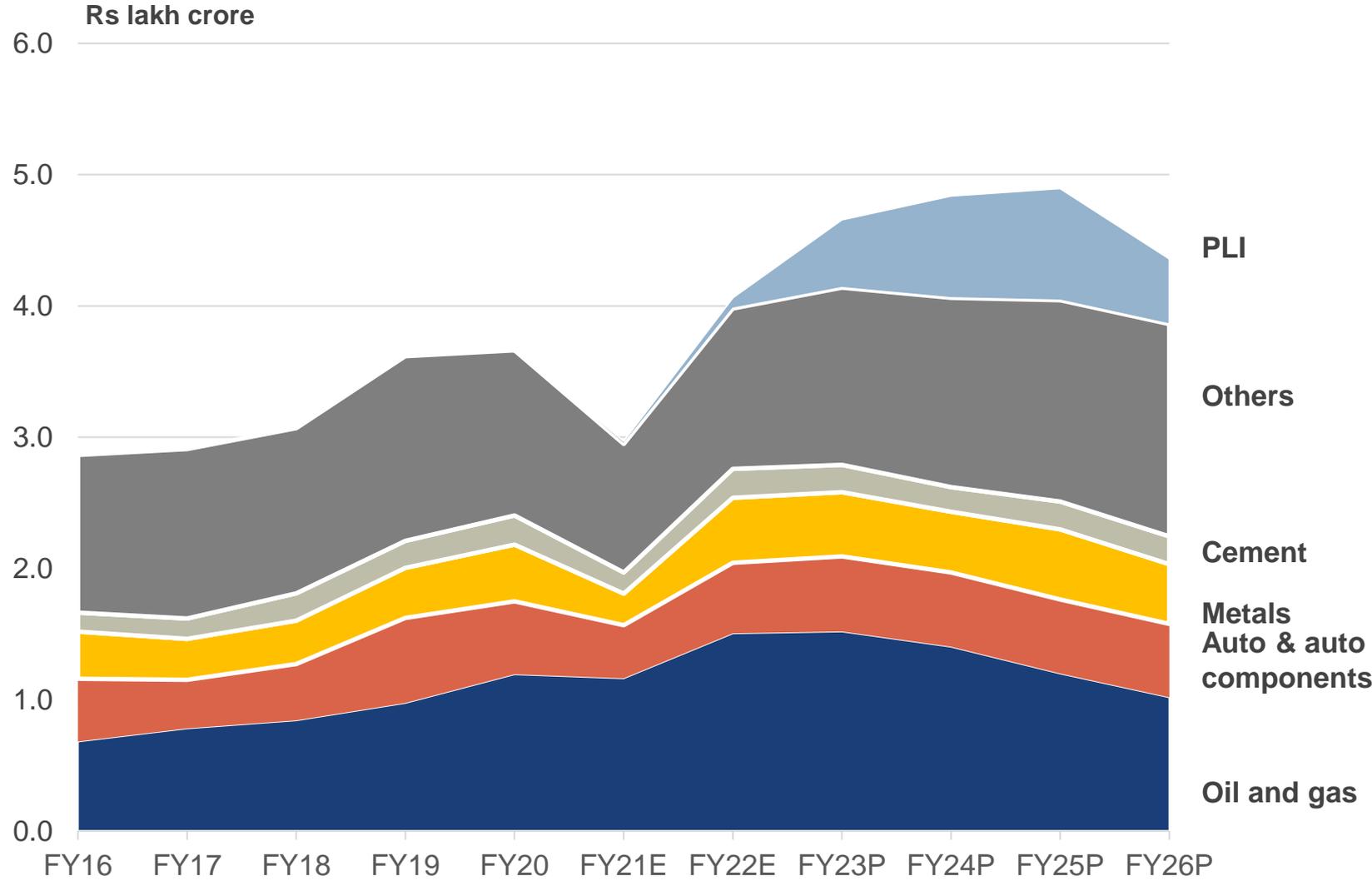
Food processing excluded in our analysis as announcement of committed investments by approved companies is awaited

Source: Union Cabinet, Ministries, PIB, CRISIL Research

PLI to supplement capex recovery from a dip in fiscal 2021

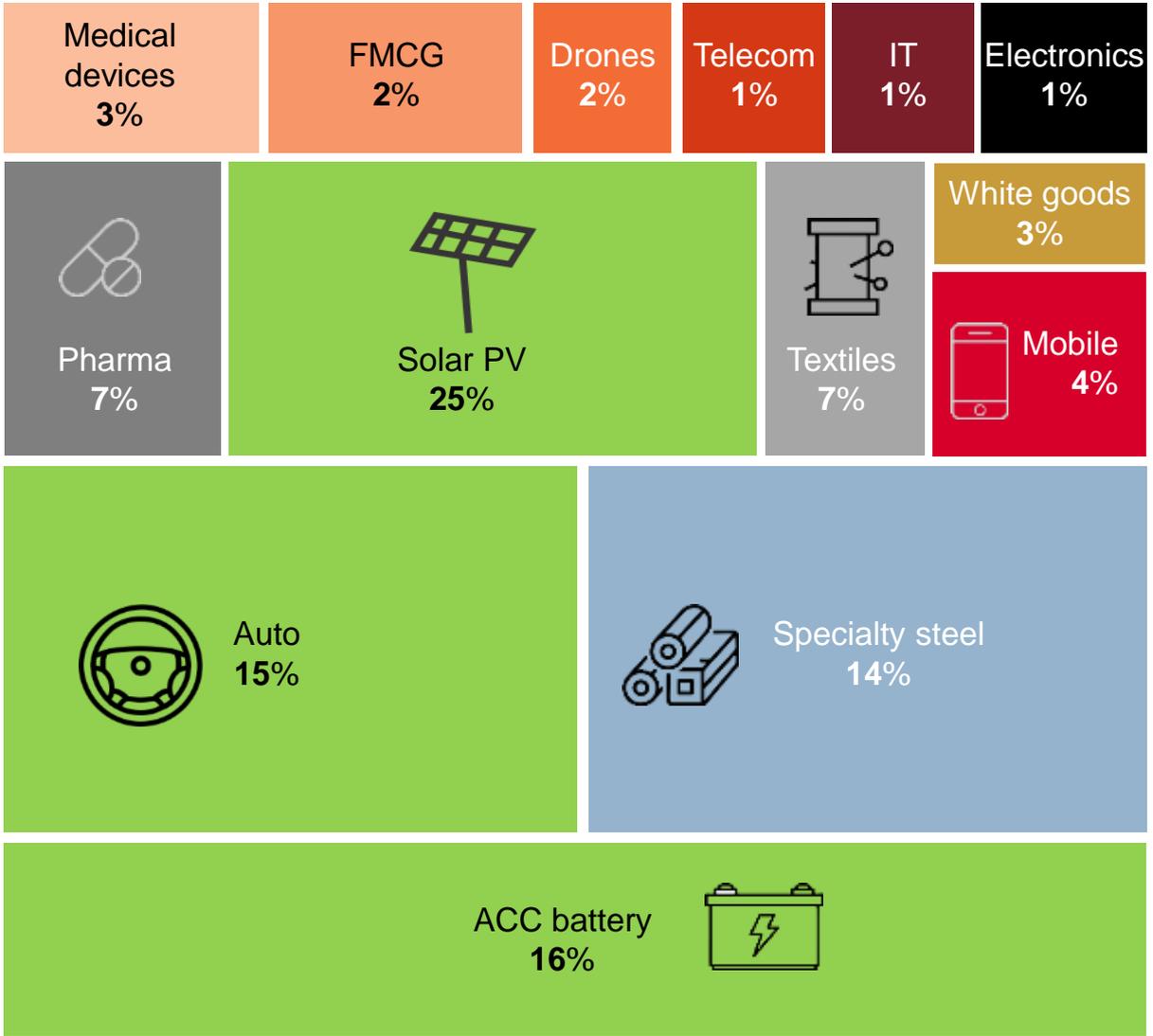
PLI capex to be 14% of total capex between fiscals 2023 and 2026

Industrial capex to rise 1.4-1.5x during FY23-26 versus FY17-20; PLI to trigger faster growth

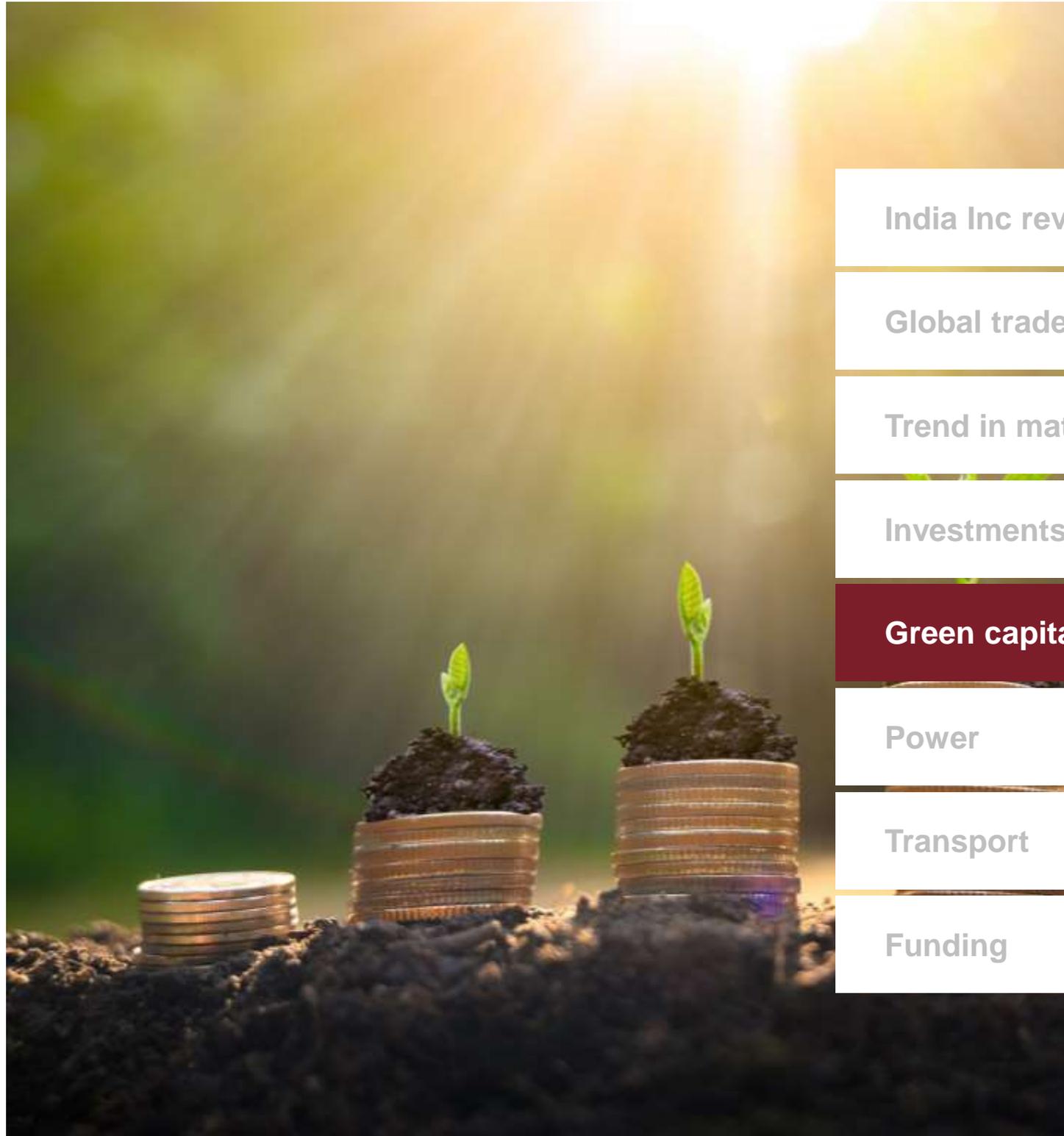


Note: Others include chemicals, FMCG, paper, pharma, textiles, electronics, FMCD, FMIG
 E: Estimated; P: Projected
 Source: CRISIL Quantix, Industry, CRISIL Research

PLI to generate capex of Rs 2.2-2.5 lakh crore; 55% of which is expected to be green



Notes: Sectors marked in green are ones geared for green capex
 Source: DPIIT, Industry, CRISIL Research



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

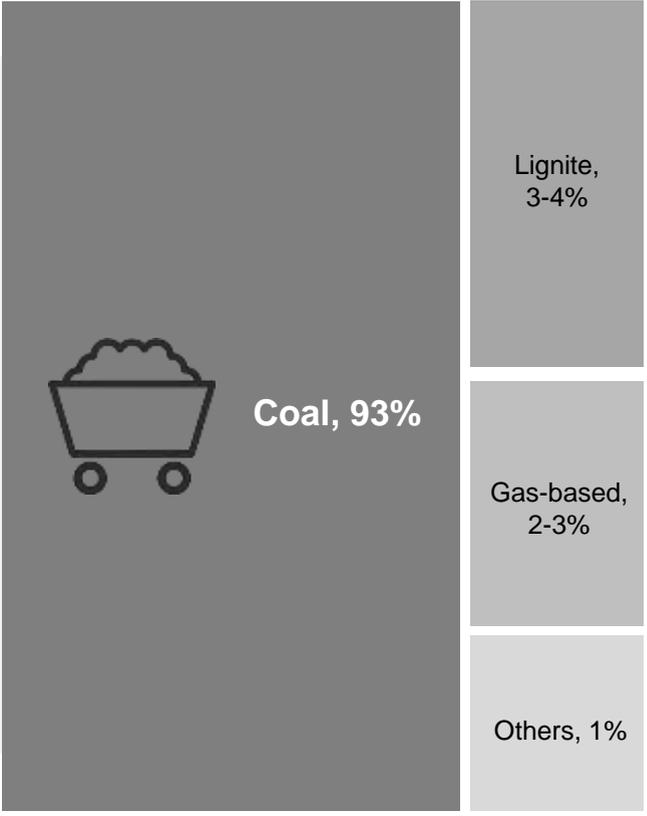
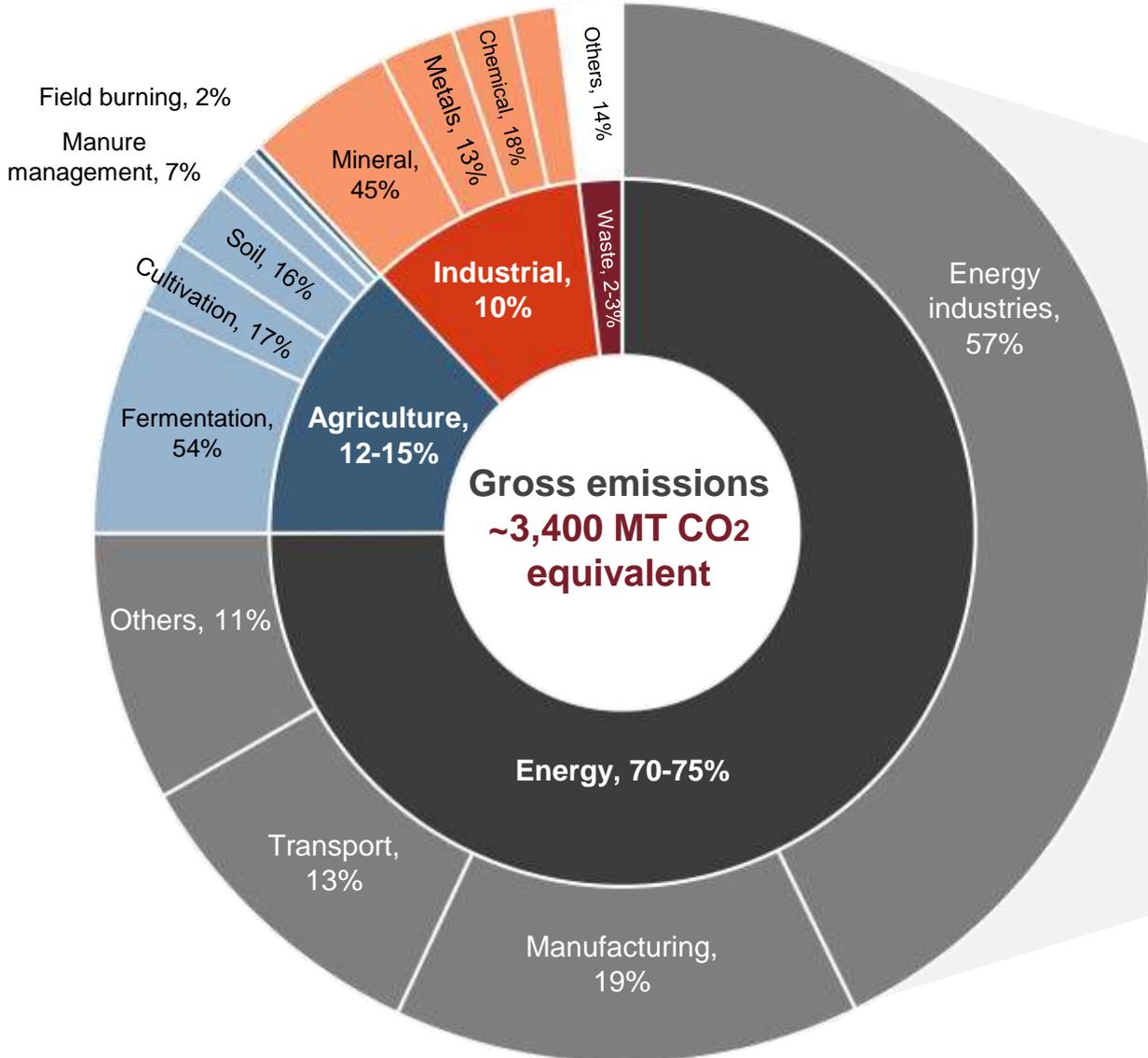
Power

Transport

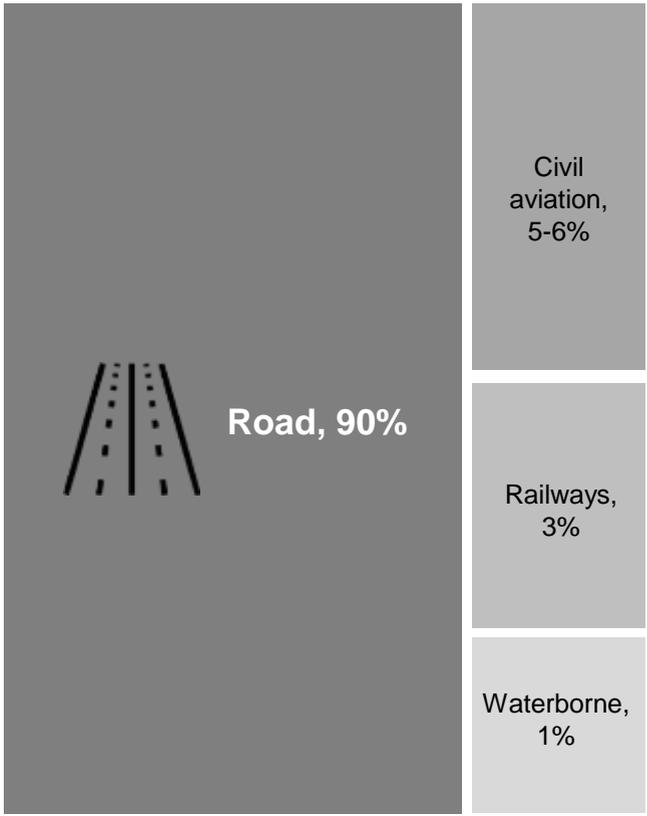
Funding

India's position on the global emissions map an important one

Power, transport and industrial account for over 70% of India's emissions



Power/energy industries
1,050 MT CO₂ equivalent



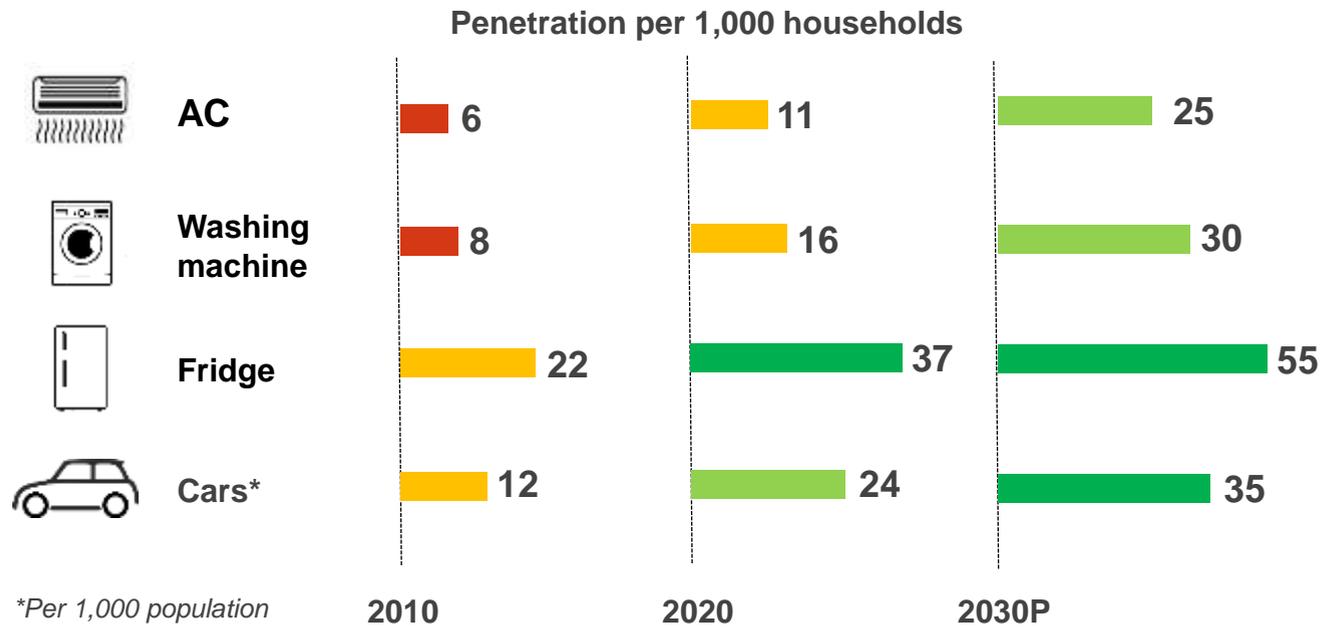
Transport
350 MT CO₂ equivalent

Note: MT-Million tonne
Source: IEA, India Biennial report, CRISIL Research

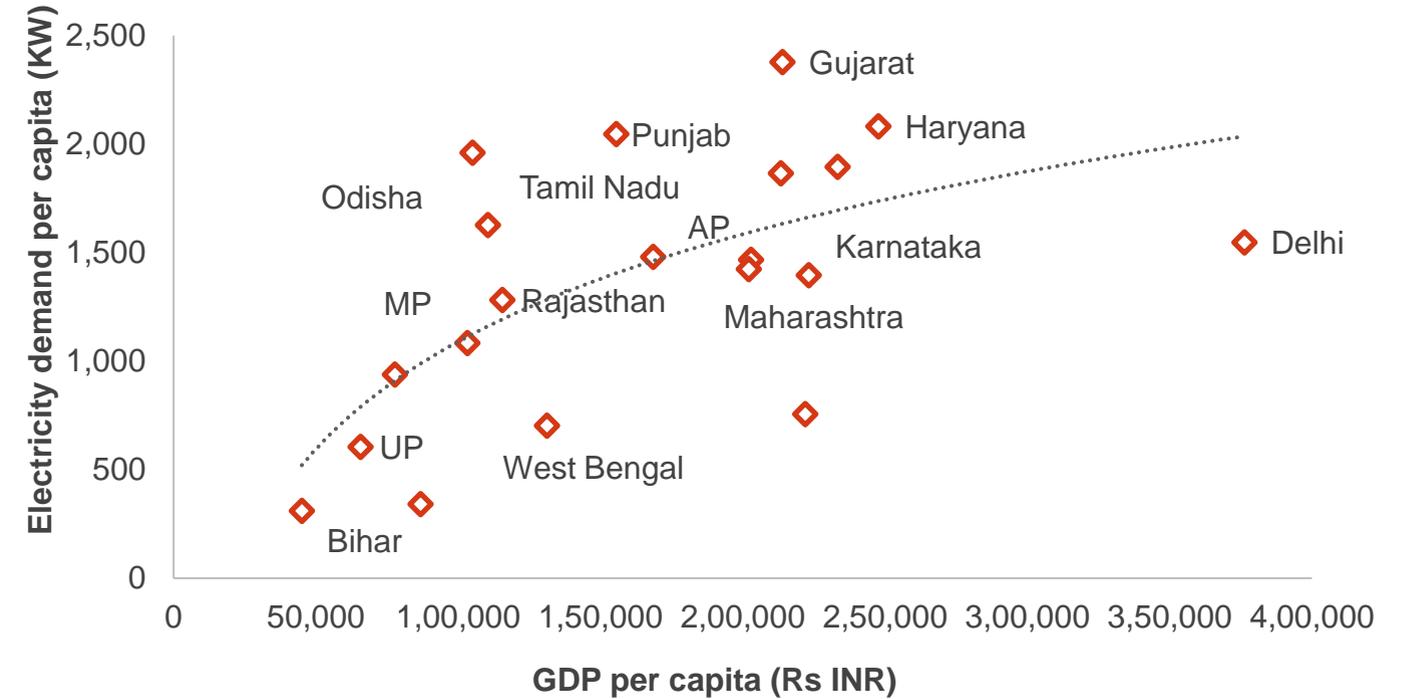
Why going green is inevitable for India

Under-penetrated market augurs well for energy consumption

Sharp rise in key consumption segments needs more energy



Power needs correlate with income at state level



Key polluting commodities continue to see improving consumption

Million tonne	2005	2010	2015	2022
Coal	408	605	823	1025
Diesel	40	60	75	82
Petrol	9	14	22	32

Note: P-projected; E-estimated
Source: PPAC, Industry, CRISIL Research

Power to drive ~85% of green investments of Rs 22-24 lakh crore till 2030

Green capex to be 50-55% of total annual investment spend; new asset vs efficiency split 85:15

		Total investments		Green investments		
		2015-22E	2023-2030P	2015-22E	2023-2030P	
Power		Rs 17.7 lakh crore	Rs 37.2 lakh crore	Rs 6.4 lakh crore	Rs 18.9 lakh crore	Green investments in power to rise by 2x over the medium term, have a 50% share of total power investments
	Fossil fuel	Rs 2.9 lakh crore	Rs 3.0 lakh crore	NA	NA	
	Non-fossil fuel	Rs 5.2 lakh crore	Rs 15 lakh crore	Rs 5.2 lakh crore	Rs 15 lakh crore	
	Grid	Rs 5.0 lakh crore	Rs 9.6 lakh crore	Rs 0.2 lakh crore	Rs 1 lakh crore	
	Efficiency	Rs 4.5 lakh crore	Rs 9.7 lakh crore	Rs 0.9 lakh crore	Rs 2.9 lakh crore	Renewable energy linked investments to account for 80% of the total spends in power and 65% of the total green investments
Transport		Rs 4.2 lakh crore	Rs 5.4 lakh crore	Rs 0.5 lakh crore	Rs 2.2 lakh crore	Over 50% of transportation investments to be linked to electric vehicle value-chain in the medium term
	Auto value chain	Rs 3.8 lakh crore	Rs 4.5 lakh crore	Rs 0.09 lakh crore	Rs 1.3 lakh crore	
	Infrastructure	NA	Rs 0.6 lakh crore	NA	Rs 0.6 lakh crore	
	Optimisation	Rs 0.4 lakh crore	Rs 0.3 lakh crore	Rs 0.4 lakh crore	Rs 0.3 lakh crore	Industrial transition may need sharper focus on green hydrogen. Current investments at technology trial stage may bring results after 2030
Hydrogen					Rs 1.5 lakh crore	

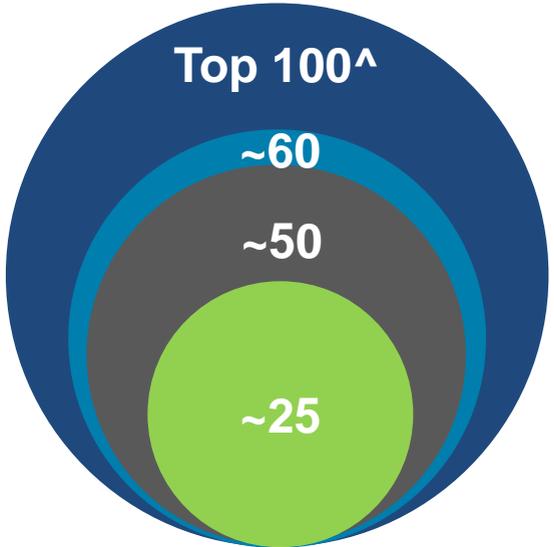
Notes: 1) Fossil fuels here are coal, diesel, natural gas and lignite; 2) Non-fossil fuels are hydro, nuclear, solar, wind and other renewables; 3) Grid investments signify capex towards power transmission with green being RE integration and power loss reduction works; 4) Efficiency investments are the spend on power distribution networks and emission reduction measures, in which green would be FGD investments, smart metering and other power network efficiency measures; 5) Infrastructure includes battery manufacturing and charging stations; 6) Optimisation includes investments towards ethanol and CNG stations; 7) Total annual investment spend considered for fiscals 2023-26; P-Projected; E-estimated; NA-Not applicable
Source: Industry, CRISIL Research

Large companies may account for 75% of green investments through 2030

Non-fossil fuel to witness major share of green capex

~50% of top 100^ companies have already initiated climate action

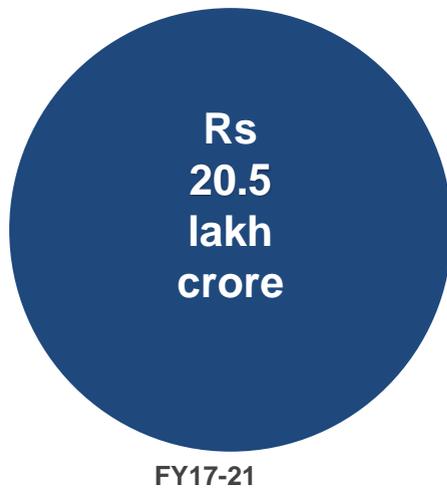
- 56% of market capitalisation of all industrial stocks*
~40% debt of corporate India*
- Disclosure of current emission (GHG emissions)
- Climate change action initiated**
- Net zero/carbon neutral year announced



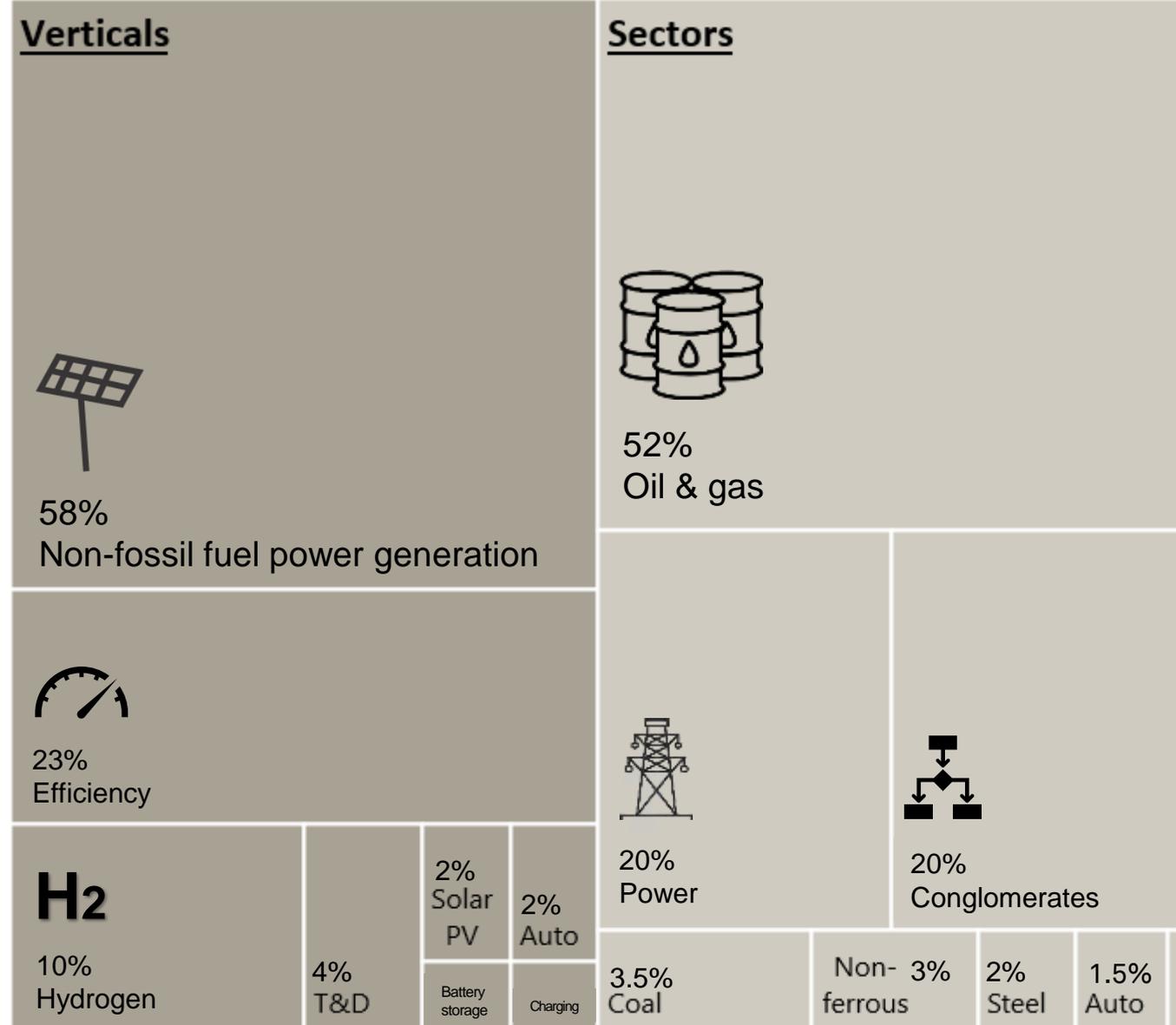
Capex# of top 100^ companies

Capex of 40 key@ companies

Green capex by 40 key @ companies FY23-28P



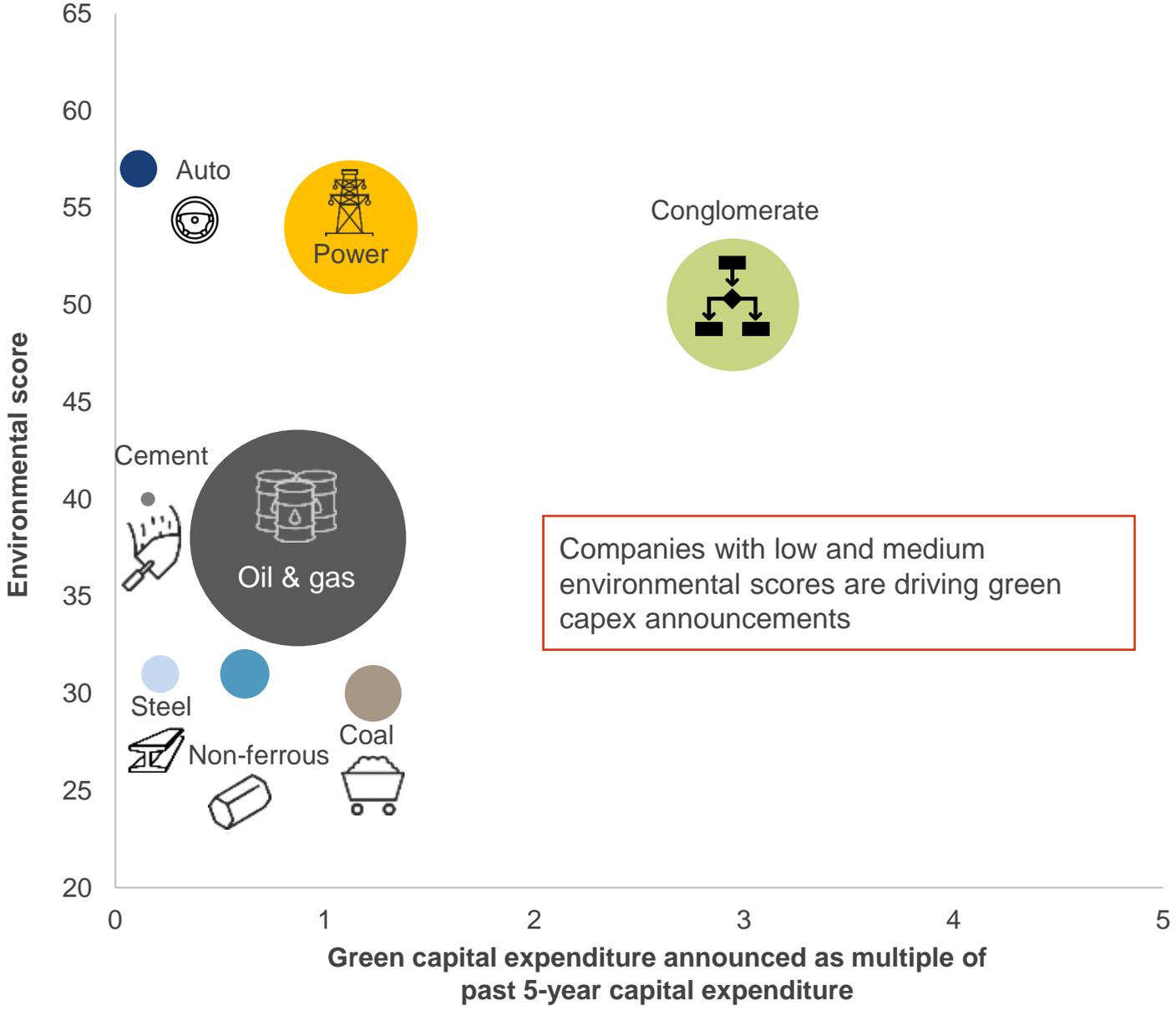
Green capex announced: Rs 14 lakh crore



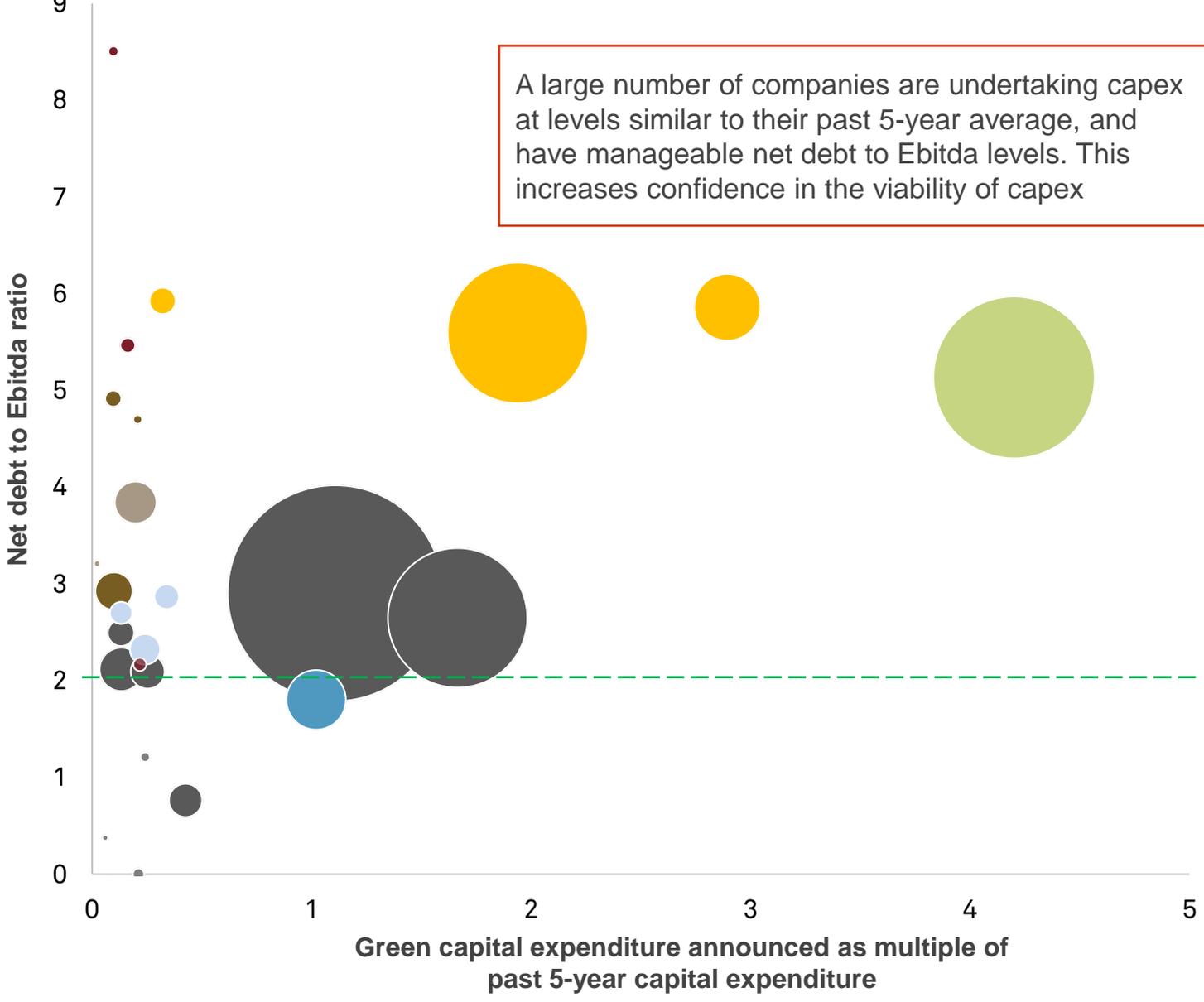
Note: ^Top 100 companies based on FY21 consolidated revenues and having exposure to polluting sectors such as power, oil and gas, chemicals, cement, steel; *Excludes key services & BFSI companies by market cap; **Includes wholesale exposure of banks/NBFC's to corporates and corporate bonds; **Emission reduction targets, net zero or carbon neutral year announced; #Capex estimated for top 100 corporates on consolidated bases using cashflow from investment in fixed asset; @40 companies that announced green capex plans in fiscal 2022; Source: CRISIL Quantix, CRISIL Research

Conventional energy cos have announced majority of green capex

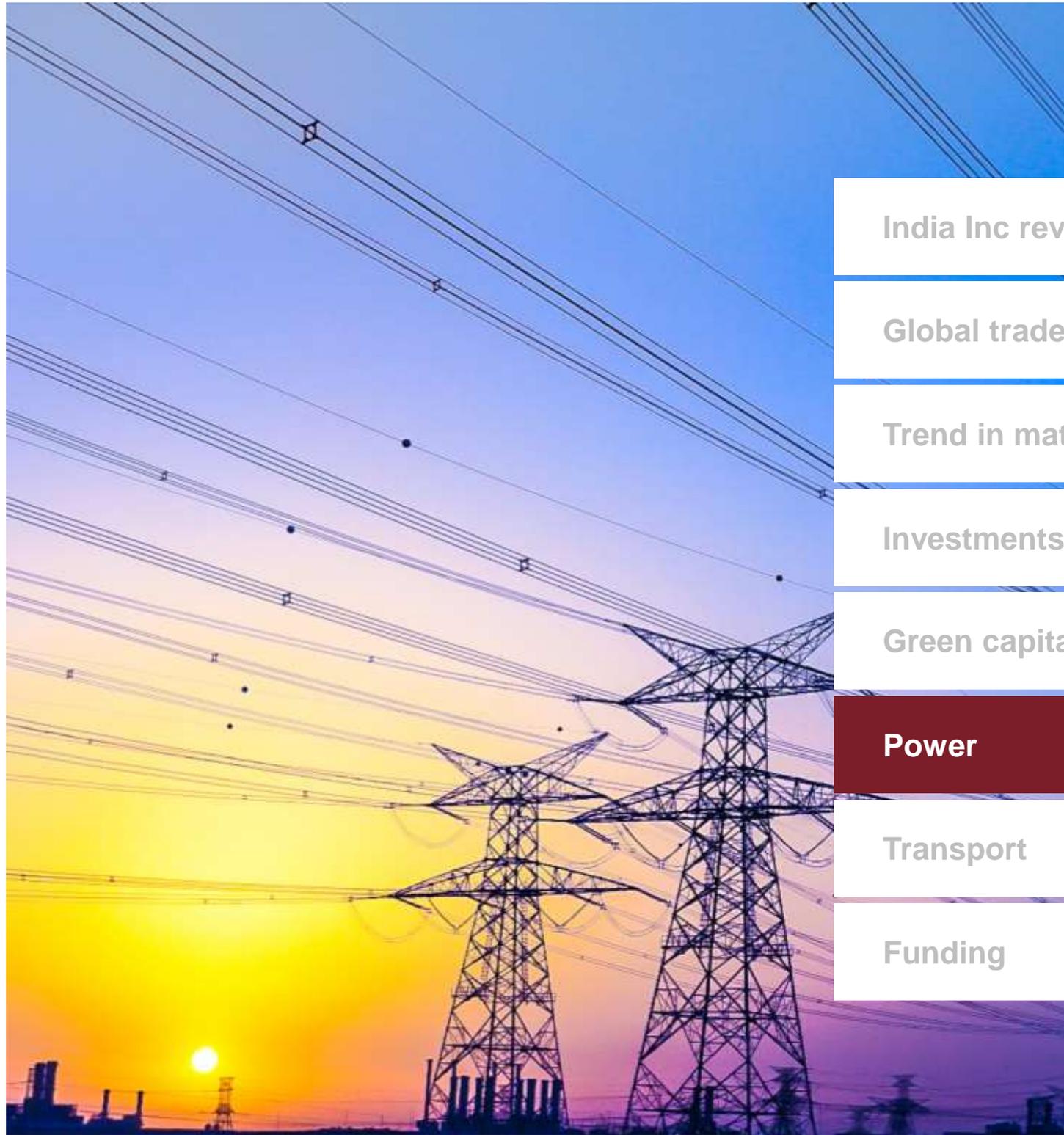
Oil & gas, power, steel and cement on industrial side are key companies investing towards decarbonisation



Nearly 60% of investments by players with net debt to Ebitda ratio less than 3 times



Note: ^Top-100 companies based on FY21 consolidated revenues and having exposure to polluting sectors such as power, oil and gas, chemicals, Average net debt to Ebitda ratio is 2.5 times;
 Source: CRISIL Quantix, CRISIL Research



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

Power

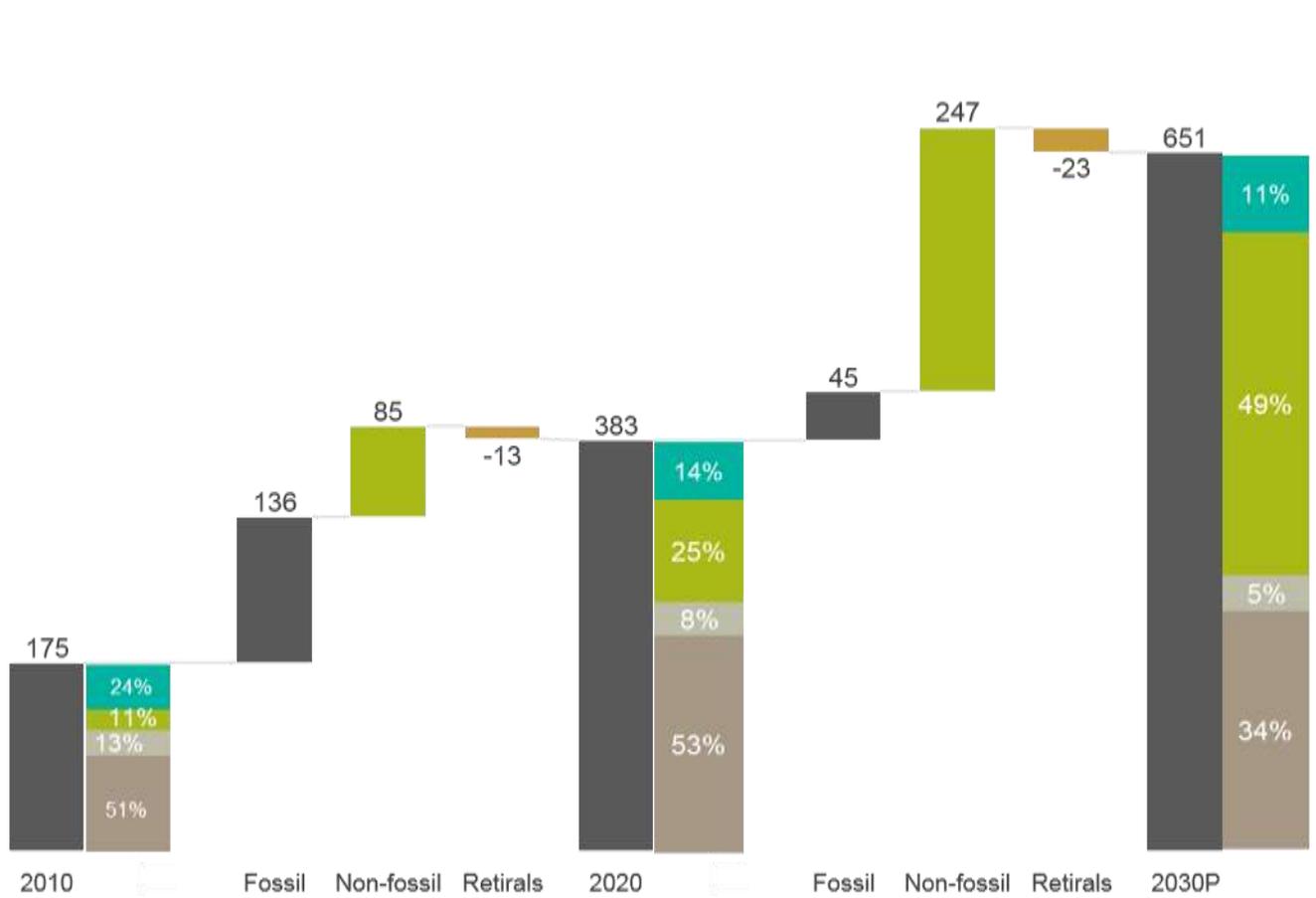
Transport

Funding

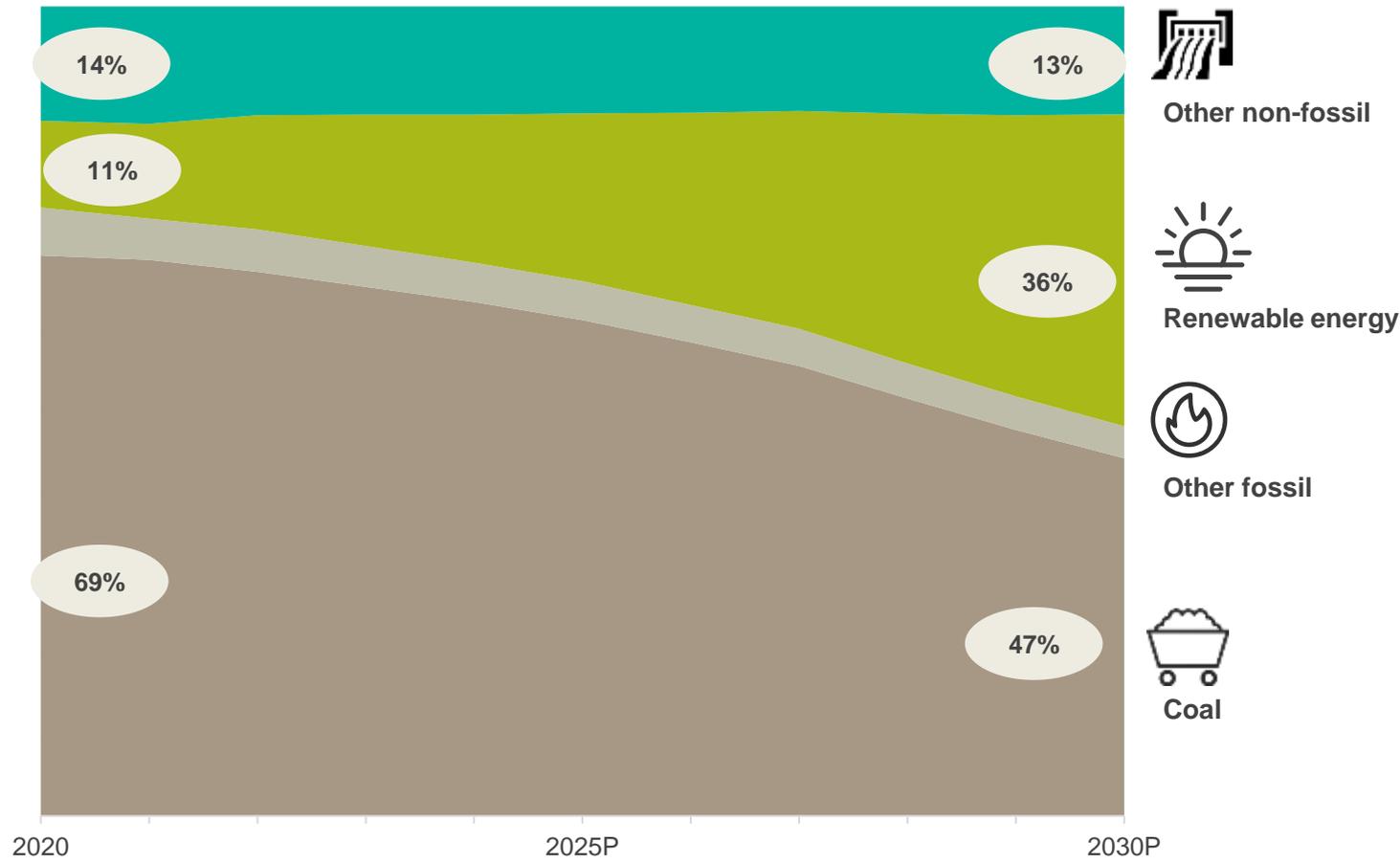
Power sector to see rapid transition in incremental generation mix

RE to account for 75-80% of incremental capacity over 2022-2030, in stark contrast to the past ten years

CRISIL sustainability scenario capacity additions



Generation mix skew is sharper towards RE



Power consumption growth at **4.4% CAGR** until 2030 with an impact of **25%** due to intensity and efficiency

Base load capacity assumed at **300 GW** by 2030

AT&C losses reduced to **11-12%** with an assumed 50-60% spend of RDSS by 2030

PLFs for coal-based capacities to be close to **54%** by 2030

Non-coal-based load generation to be **over half** of total base load needs

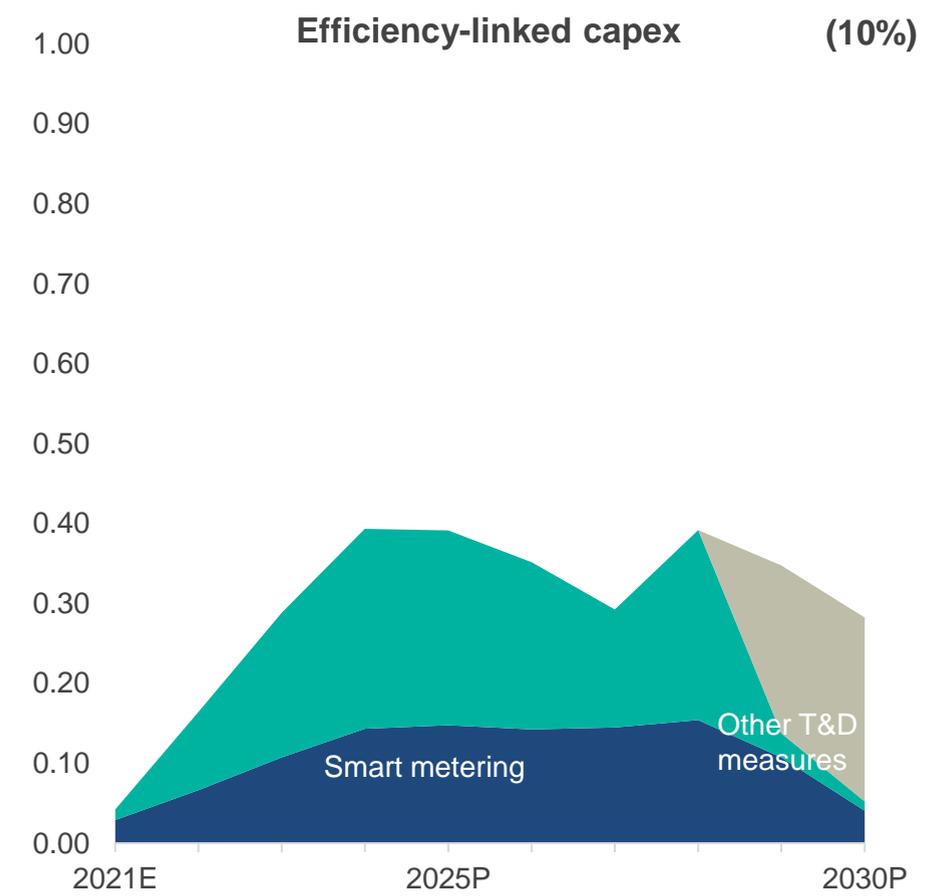
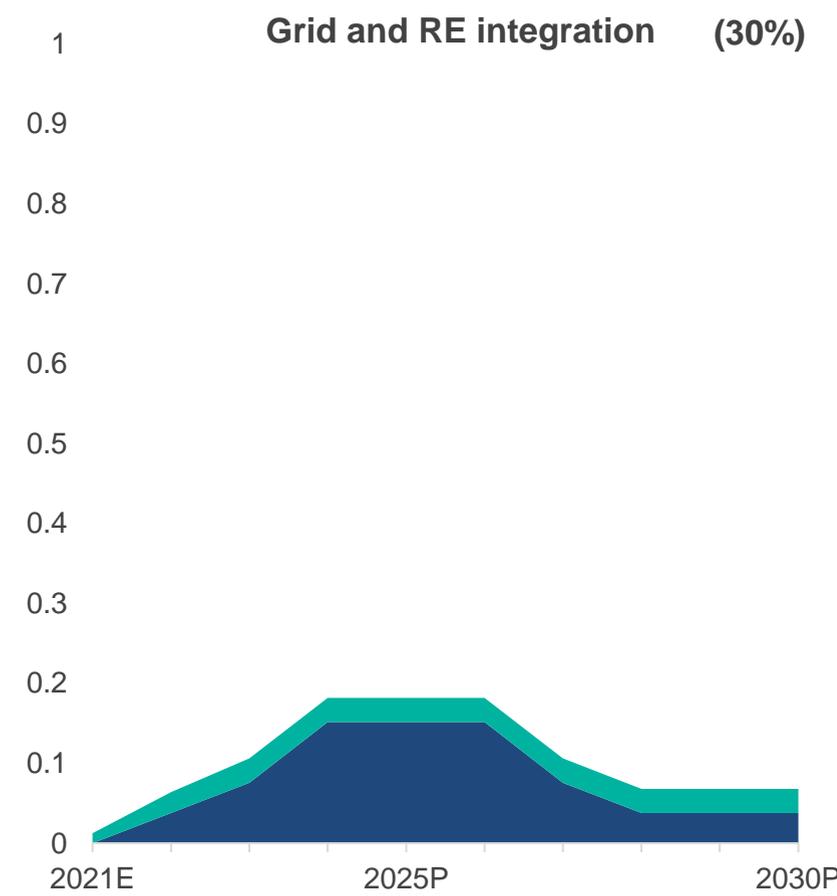
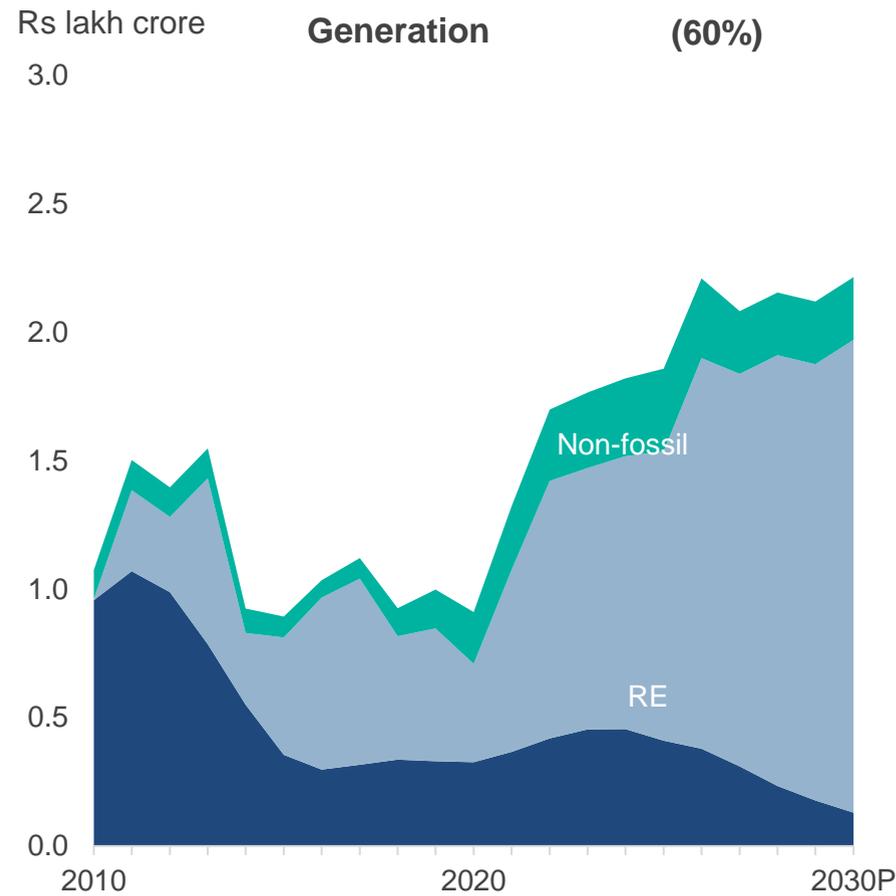
RE generation to rise to **~36%** of total, still short of COP 26 targets

Capacity target shortfall expected at **100-120 GW**

Note: P-Projected; RE-Renewable energy;
Source: CEA, CRISIL Research

Annual capex in 2023-30 seen at ~Rs 2.1 lakh crore, or 4x of 2015-22

Green investments pegged at 50% of total spends, compared with 30% in past decade



Capex cost in RE to drop by **0-5%** from **13%** in past decade

Within RE, share of solar: onshore wind: offshore wind: hybrid to shift from 20:80:0:0 in FY16 to 58:19:3:20 in 2030

Expected delays in intra-state scheme execution to constrain investment potential

RDSS spends assumed at 50-60% of actual targets.
Close to Rs 28,000 crore to be invested to add 100-120 GW of transformation capacity dedicated to RE

Spending of **Rs 1.4 lakh crore** on **30 crore smart meters**, transmission equipment revamp and on emission control for **~170 GW of coal fleet** to be key areas

Note: E-Estimated; P-Projected

Flue gas desulphurisation (FGD) involves installation of equipment for lowering sulphur emissions from thermal power plants.

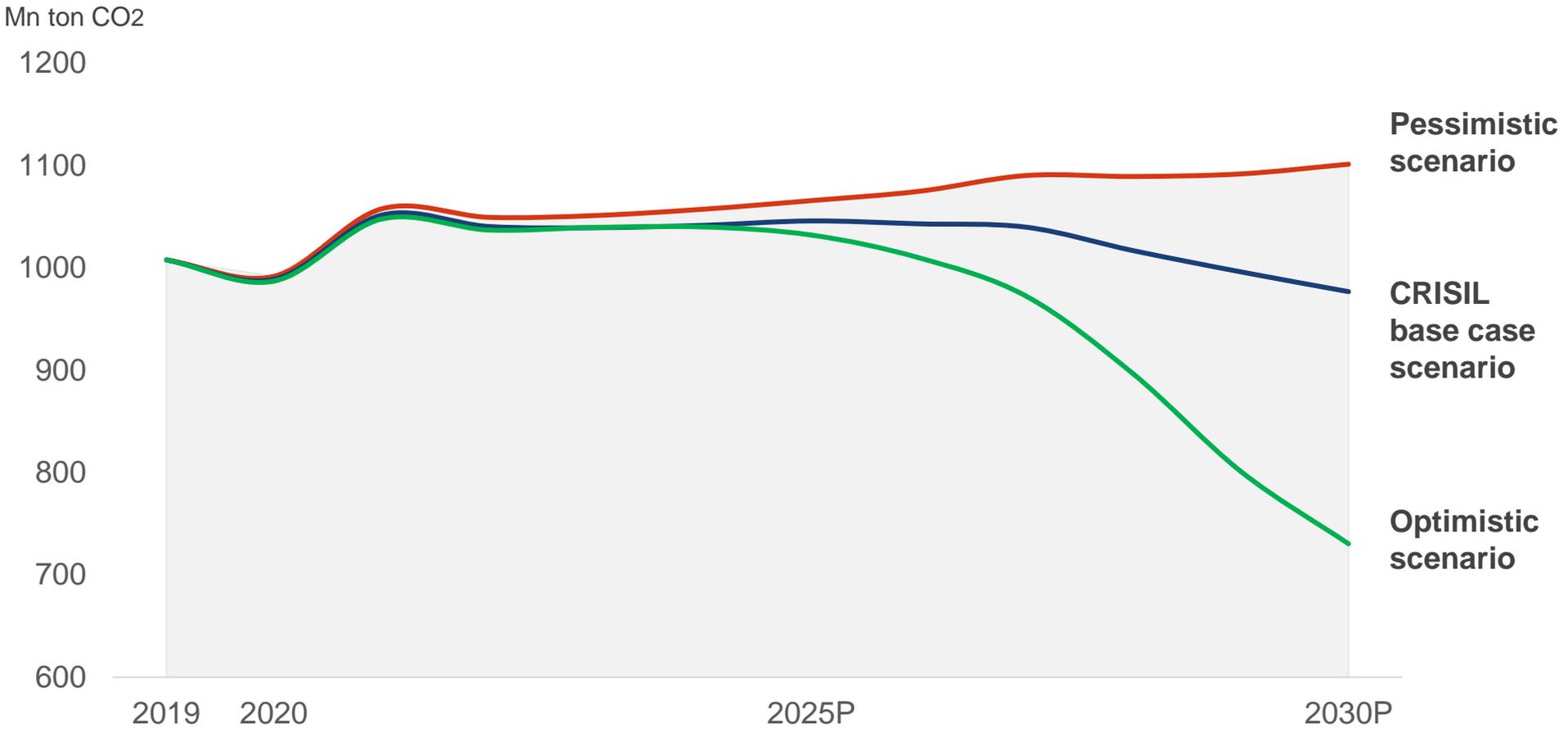
Grid and RE integration investments relate to transmission networks set up specifically for renewable energy projects.

Other T&D measures signify potential investments towards further network augmentation for loss reduction and other measures for grid stability necessitated by RE integration.

Source: CEA, CERC, MNRE, MoP, EESL, CRISIL Research

Emission drop to be driven by supply mix and policy-linked efficiency

Overall power emissions could drop 10-12*%



To achieve COP emissions, incremental investment of **Rs 7-8 lakh crore** needed

PLFs for coal-based plants will move below viability levels in COP26 scenario and hence compensation for the same needs to be factored in incremental investments

Base-load capacity needs will not allow lower fossil additions

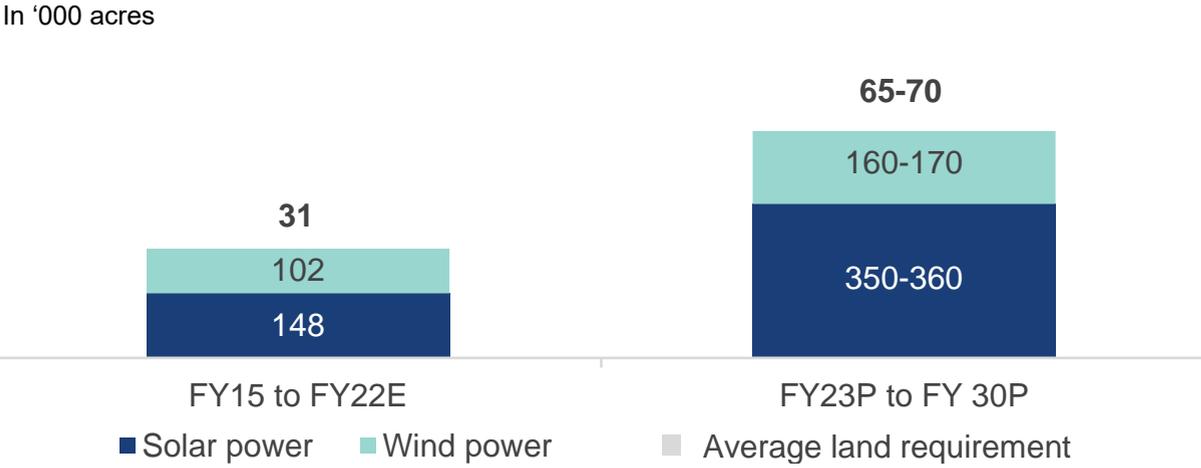


Note: P-Projected; *Emission drop calculated for terminal year (2030) as CRISIL base case scenario over pessimistic scenario
Source: CEA, CRISIL Research

While we move towards more RE, there are monitorables

Resource availability of transition crucial for LCOE sustenance

Average land requirement set to double over the next decade



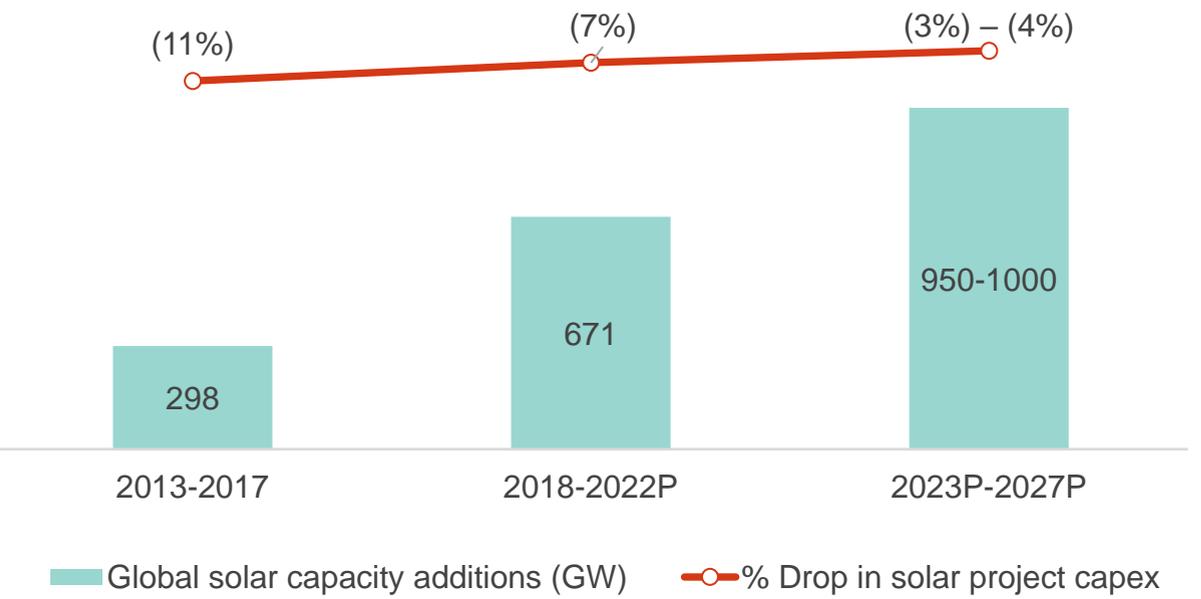
Planning of solar projects in areas with large swathes of land, such as the Thar desert in Rajasthan, or the Ladakh region, would enable better availability. Additional options such as floating solar can be considered

Amid high quantum of green bond issuances, cost of debt to remain a monitorable for returns

Equity IRR (%)	Interest rate (%)							
	6%	7%	8%	9%	10%	11%	12%	
Capex costs (Rs Mn / MW)	35	14%	13%	12%	12%	11%	10%	9%
	40	13%	12%	11%	11%	10%	9%	8%
	45	12%	11%	10%	10%	9%	8%	8%
	50	11%	10%	10%	9%	8%	8%	7%
	55	10%	10%	9%	8%	8%	7%	7%
	60	9%	9%	8%	8%	7%	7%	6%
	65	8%	8%	7%	7%	6%	6%	6%

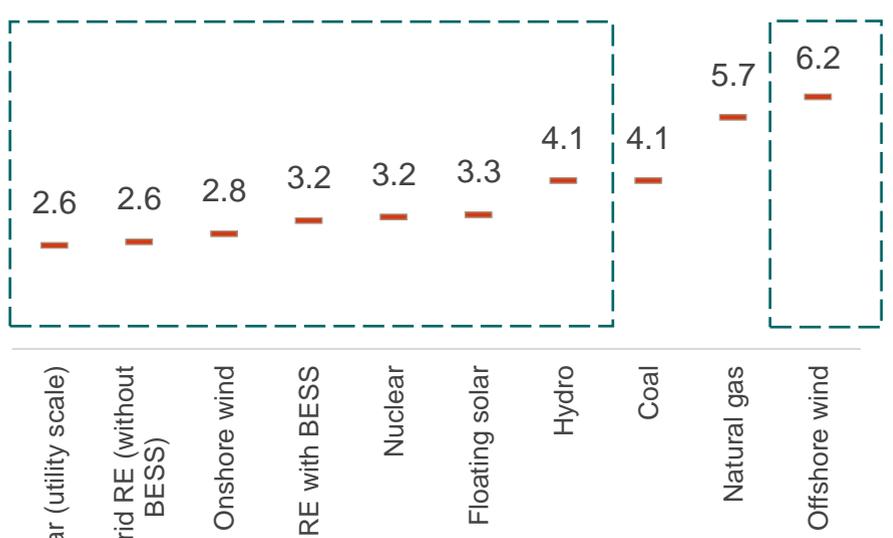
Green bonds formed about half of the overall funding in the recent past, with coupon rates of 3-6%. This provides an attractive alternative for RE financing

Limited reduction in capex to make role of technology critical for returns



Global solar additions expected at ~1,000 GW over 2023-2027. But capital costs may not see a big fall due to constant technological change and the fact that they have already fallen sharply. This makes the role of technology important from the perspective of enhancement of returns

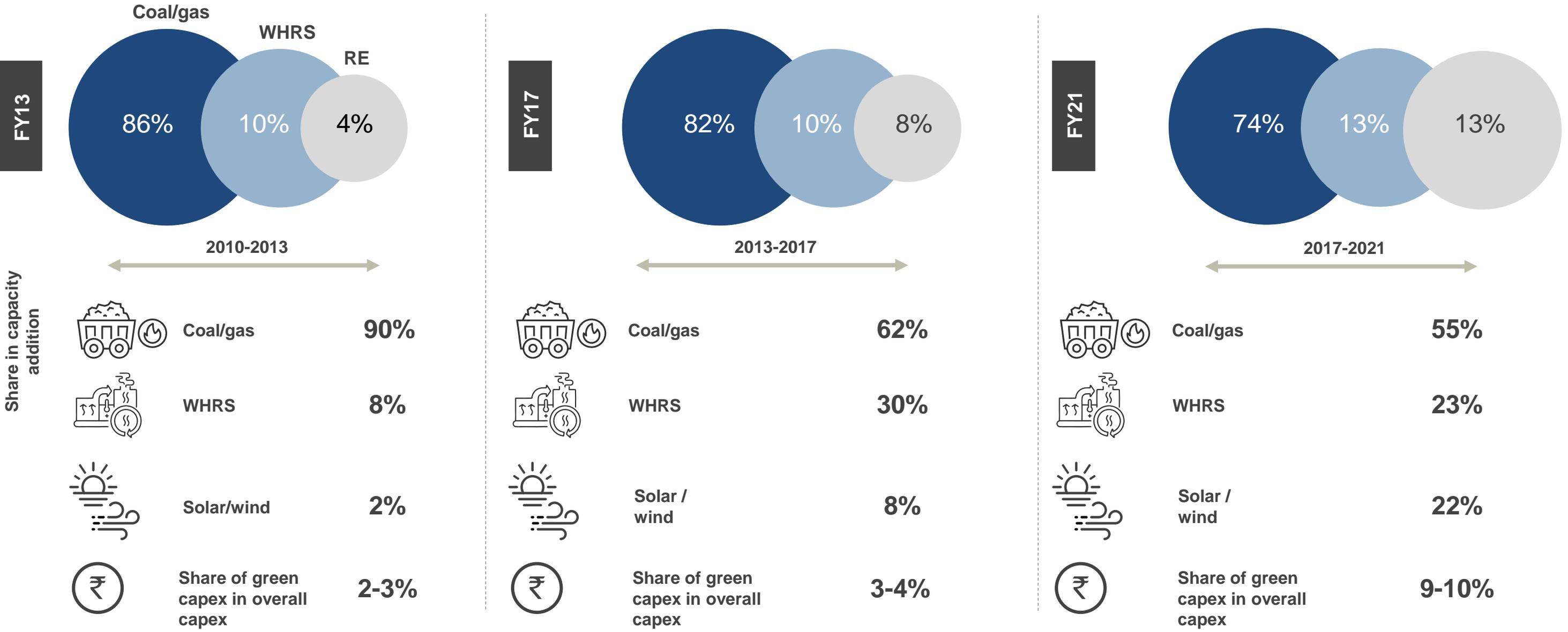
LCOE sustainability crucial for RE adoption



LCOE sustenance, especially for key fuels such as solar, depends on continued availability of low-cost financing, better efficiency, and supply-side stability. Surge in commodity prices may have already impacted LCOEs. To be sure, gas prices have risen 3x y-o-y in Q1 2022

Note: LCOE calculations are calculations of indicative annual LCOE as on fiscal 2022 for all fuels; Solar project estimates do not include the cost of land; P-projected; E-estimated Source: CEA, CERC, MNRE, NREL, SECI, IRENA, CRISIL Research

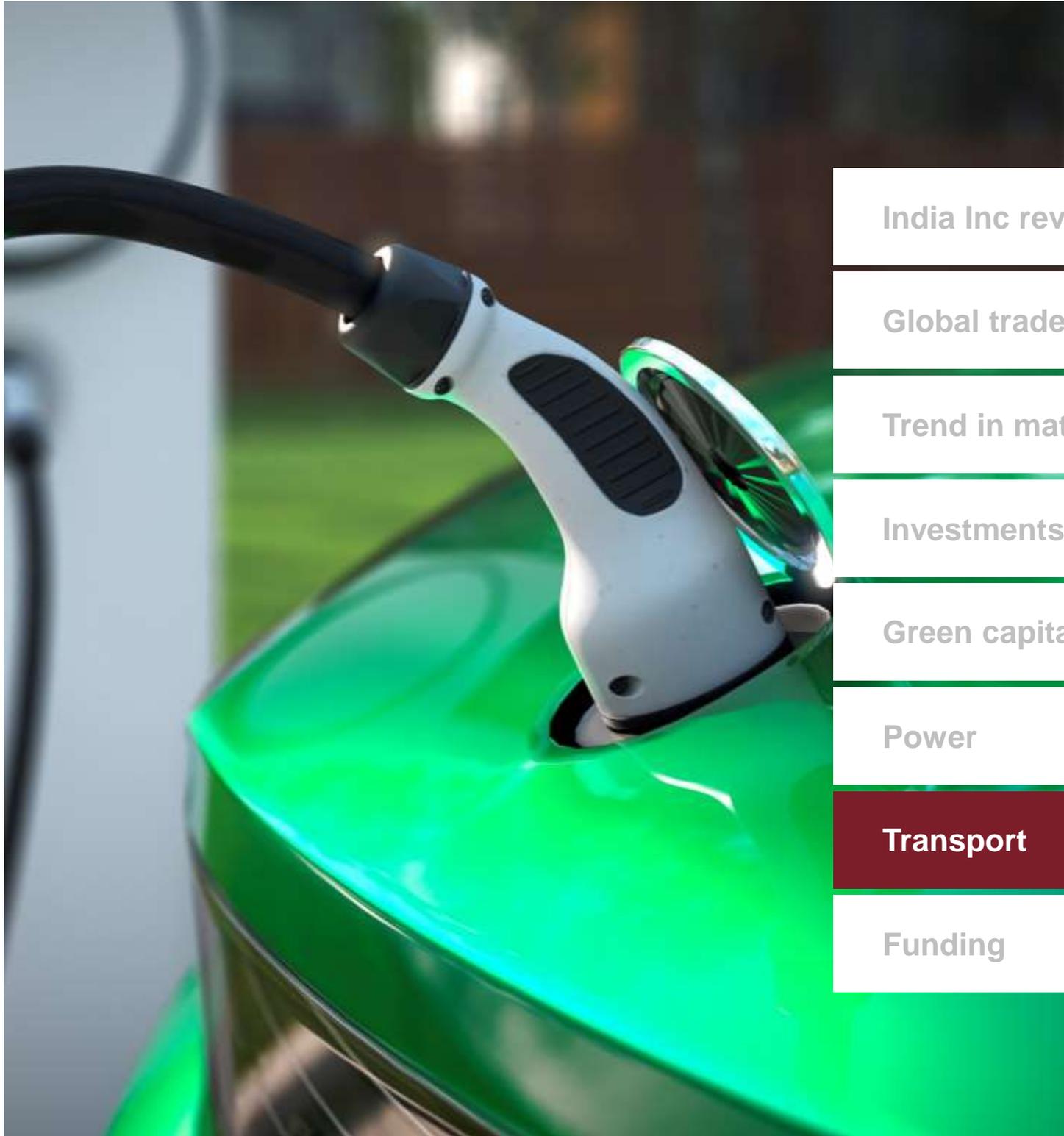
Cement industry sharpens focus on green power generation



- Share of RE and WHRS rose to over 25% in fiscal 2021; to rise further as players continue to add RE capacity
- Large players such as UltraTech aim to increase the share of green energy to 34% of total power requirement by 2024 and to 100% by 2050; ACC and Ambuja to invest over Rs 780 crore in green power generation in next 1-2 years
- Share of green capex has risen to ~10% of total capex by 2021, and will rise further

Notes: Above data includes financials and operational data of top six companies of cement industry which comprise ~50% of market share by capacity (UltraTech, ACC, Ambuja, Shree, Dalmia and Ramco).

*Green power includes WHRS and renewable energy (solar+wind+ biomass)



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

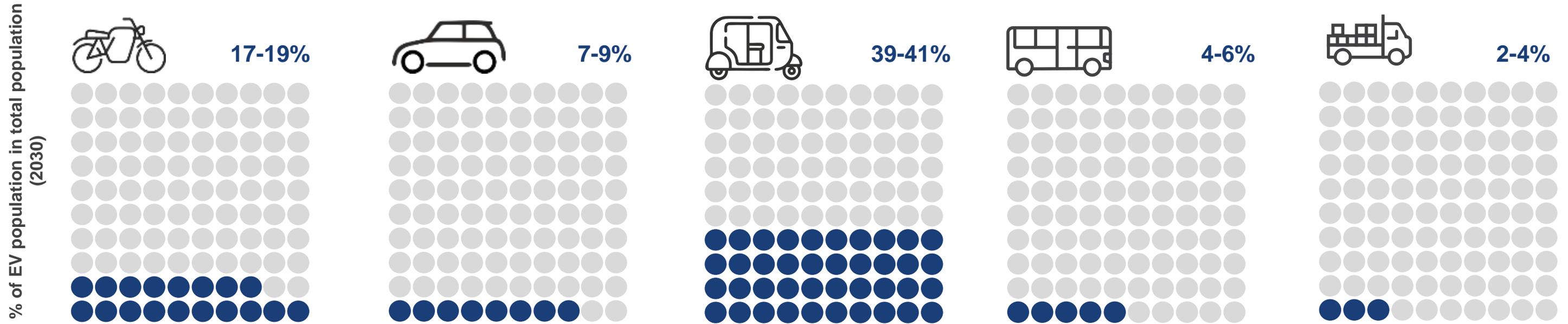
Power

Transport

Funding

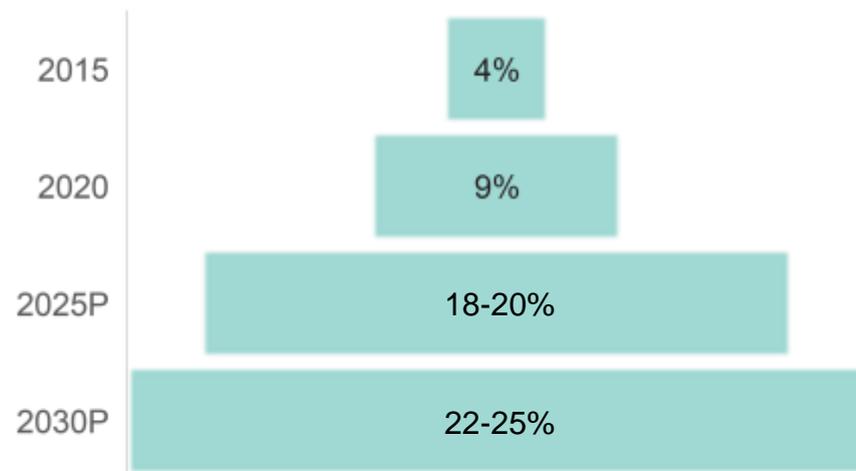
Average annual EV sales pegged at 6-7 million units in 2025-30

Only 31,000 EVs sold annually in the past 5 years, but this fiscal alone, EV sales estimated to be 3.5-4 lakh units



EV, ethanol blending, CNG to drive mere 1% of transition until fiscal 2025; impact to be felt thereafter

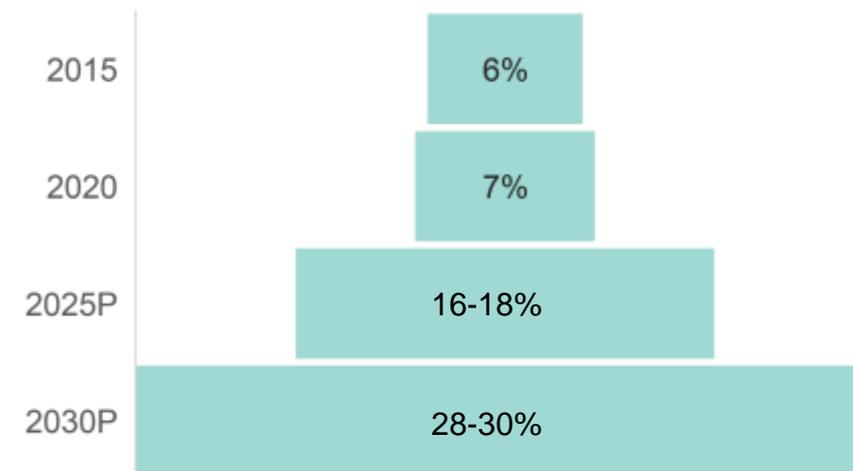
Ethanol blending as % of petrol consumption



To displace 62-64 million tonne of petrol between 2022 and 2030

To be split 58:42 between molasses-based and grain-based ethanol

CNG penetration in new car sales



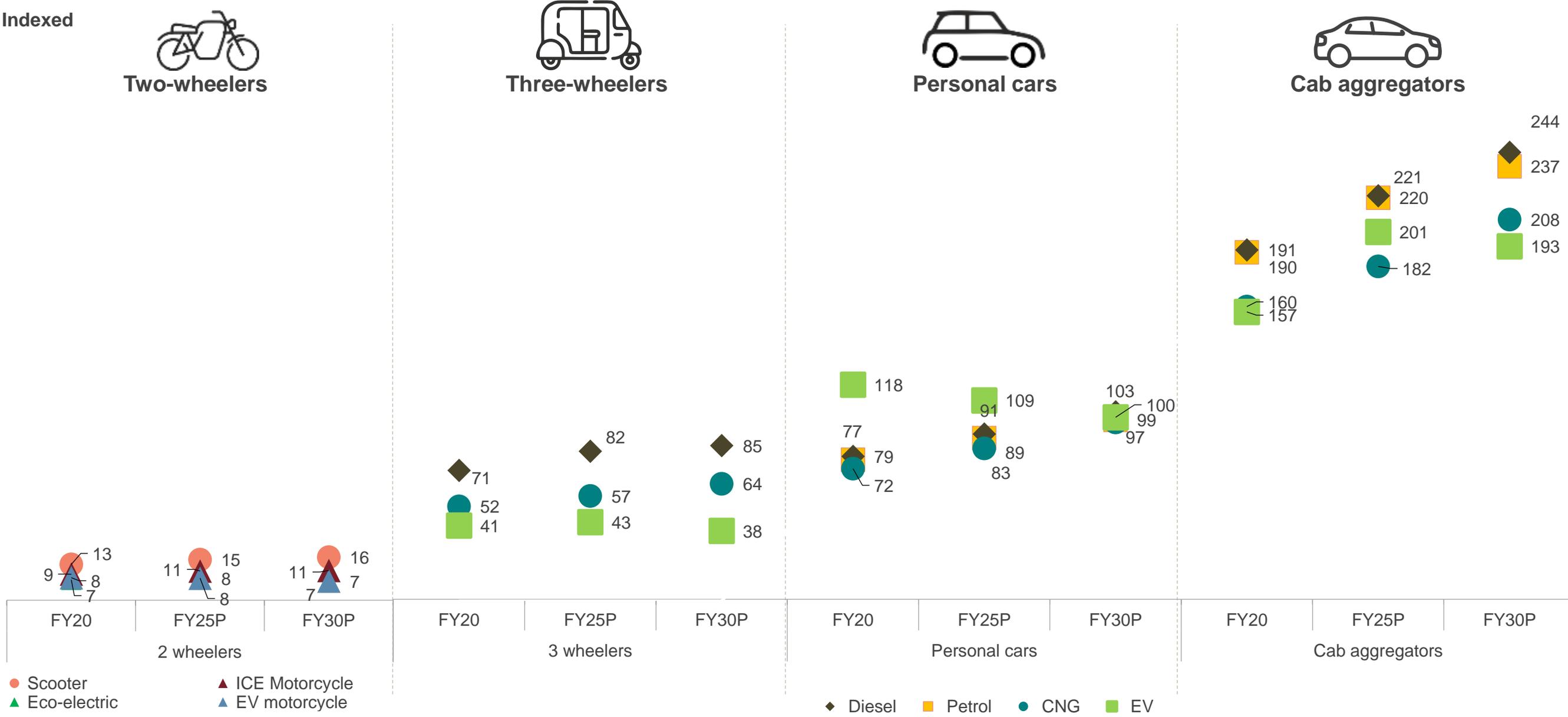
To displace 23-25 million tonne of petrol between 2022 and 2030

To displace 10-12 million tonne of diesel between 2022 and 2030

Note; P-projected
Source: PPAC, CRISIL Research

Ownership cost dynamics shifting in favour of EVs

Total cost of ownership favourable for EV in passenger car vehicles post fiscal 2025

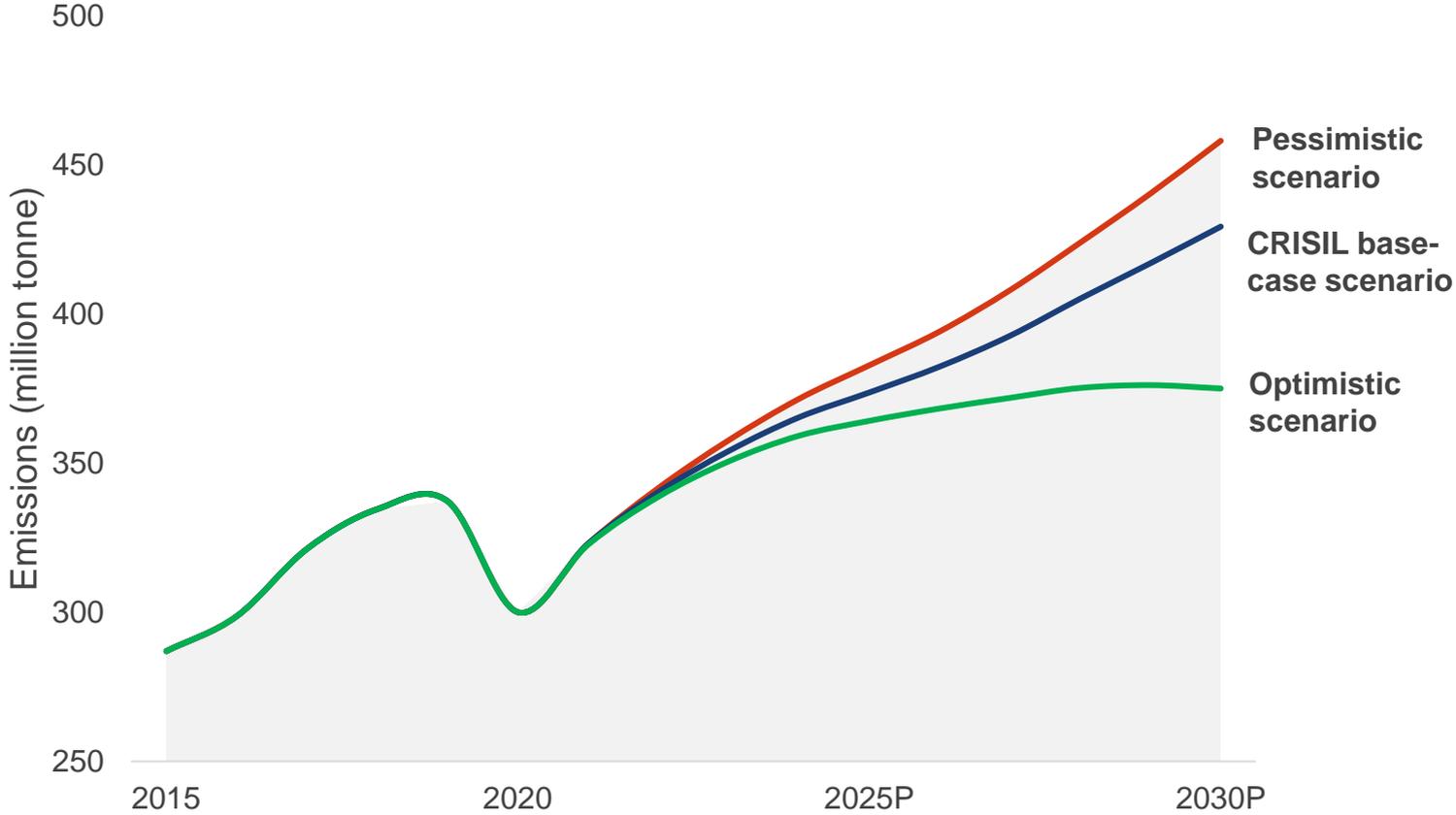


Note: Index based on EV prices of personal cars (FY25); P-projected
 Source: CRISIL Research

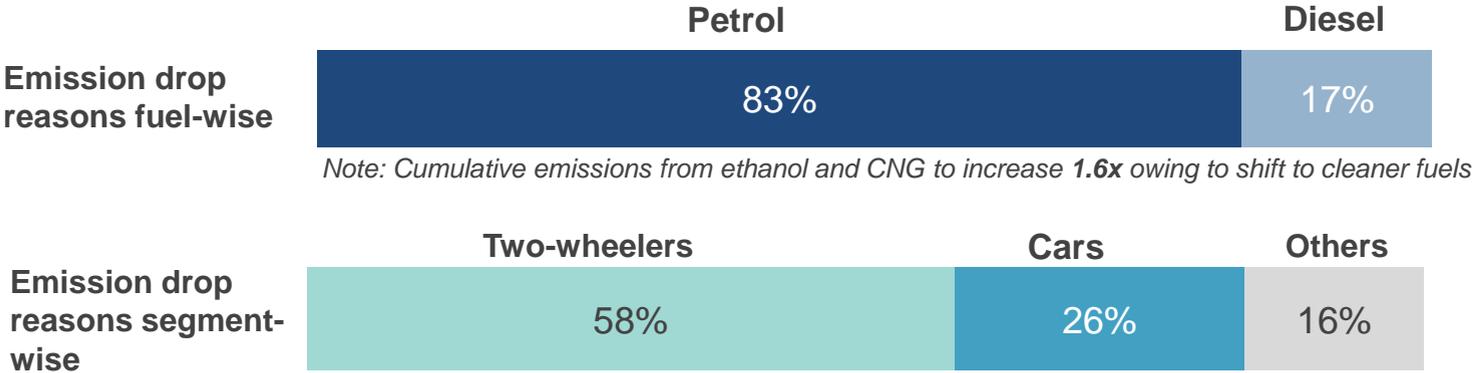
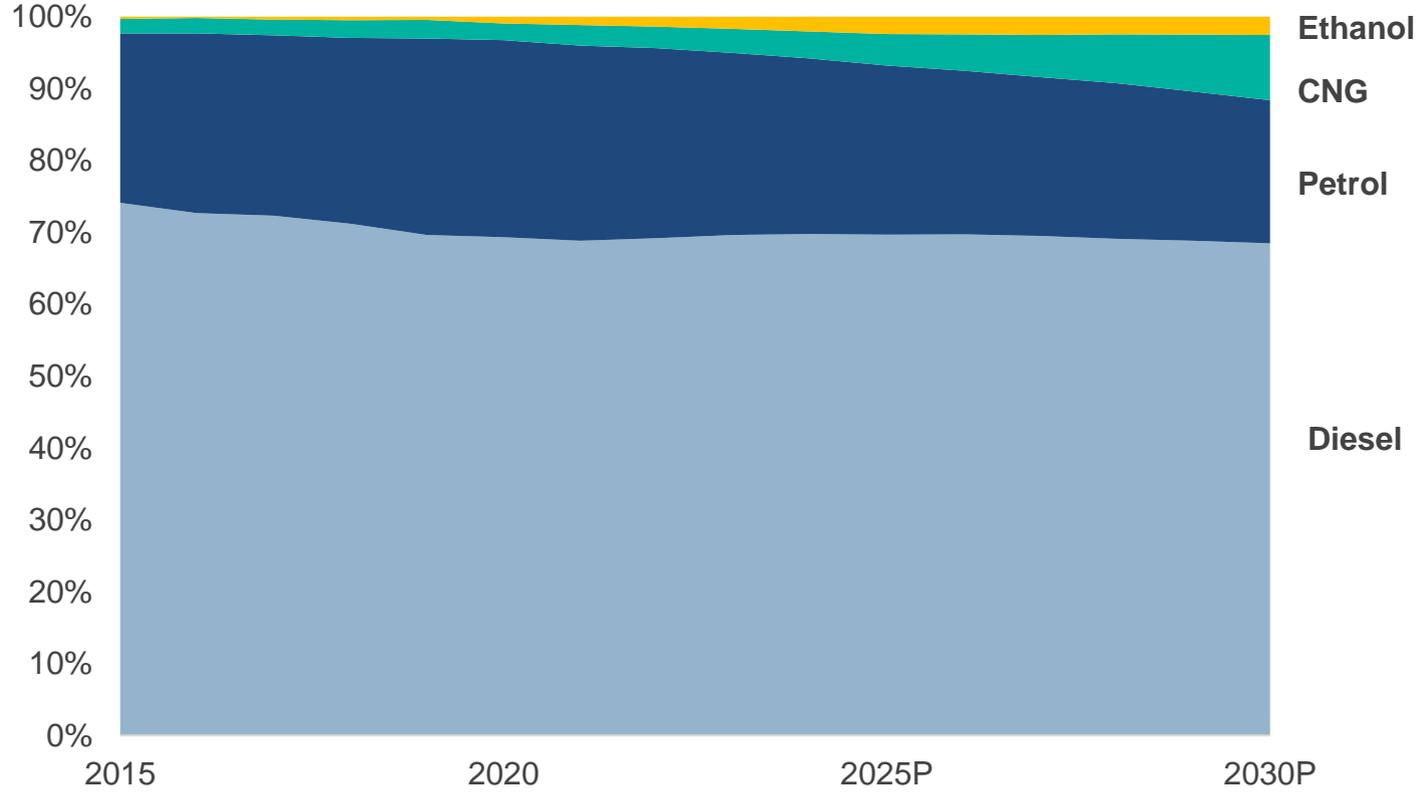
Fuel strategies to lower emissions by 6*% in the transport segment

Under-penetrated auto market may limit opportunities to lower absolute emission

Petrol-linked transition to drive drop in emissions



Share of emissions from petrol to drop by 6%; share of diesel largely stable



Note: Cumulative emissions from ethanol and CNG to increase 1.6x owing to shift to cleaner fuels

Total decline in emissions restricted to ~6*% up to 2030 owing to increase in vehicle population

Share of emissions on CV side stabilise with efficiency drives

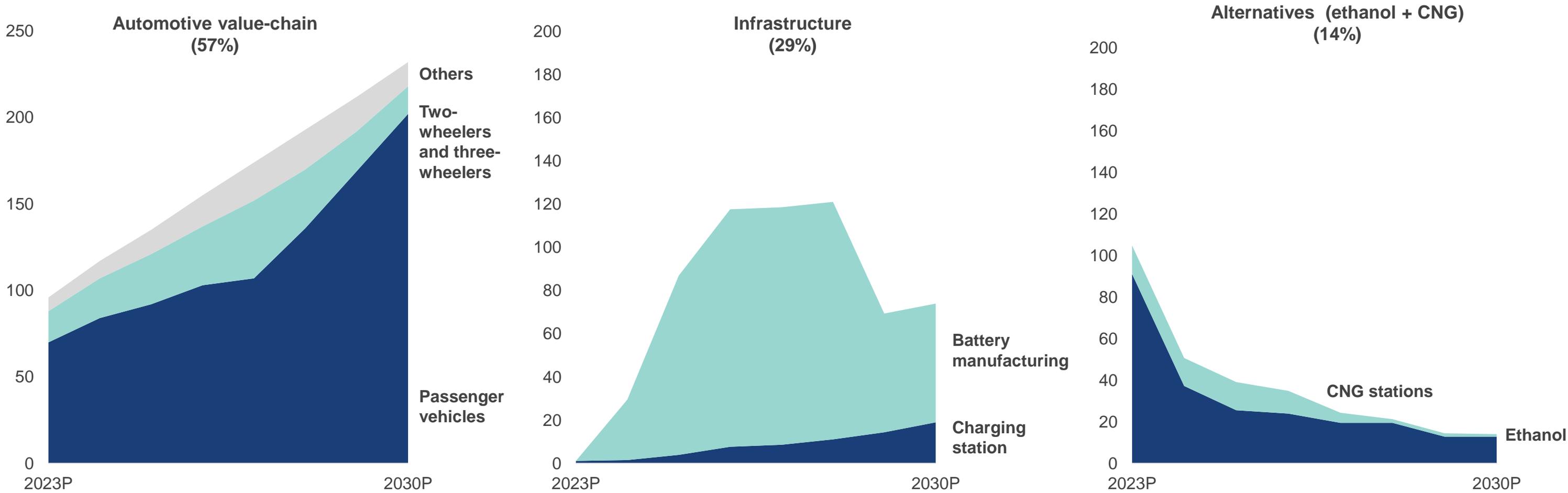
Petrol-linked emissions to be lowered by 18%

Note: P-projected; *Emission drop calculated for terminal year (2030) as CRISIL base case scenario over pessimistic scenario
 Source: India Biennial update report, IEA, CRISIL Research

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Investments in the transport sector pegged at Rs 2.2 lakh crore till 2030

OEMs to drive ~57% of investments between 2023 and 2030



~77% of investments driven by passenger vehicles, auto comp may have upside

Investments committed by two-wheeler and three-wheeler players sufficient to meet green targets, upside in segments such as cars

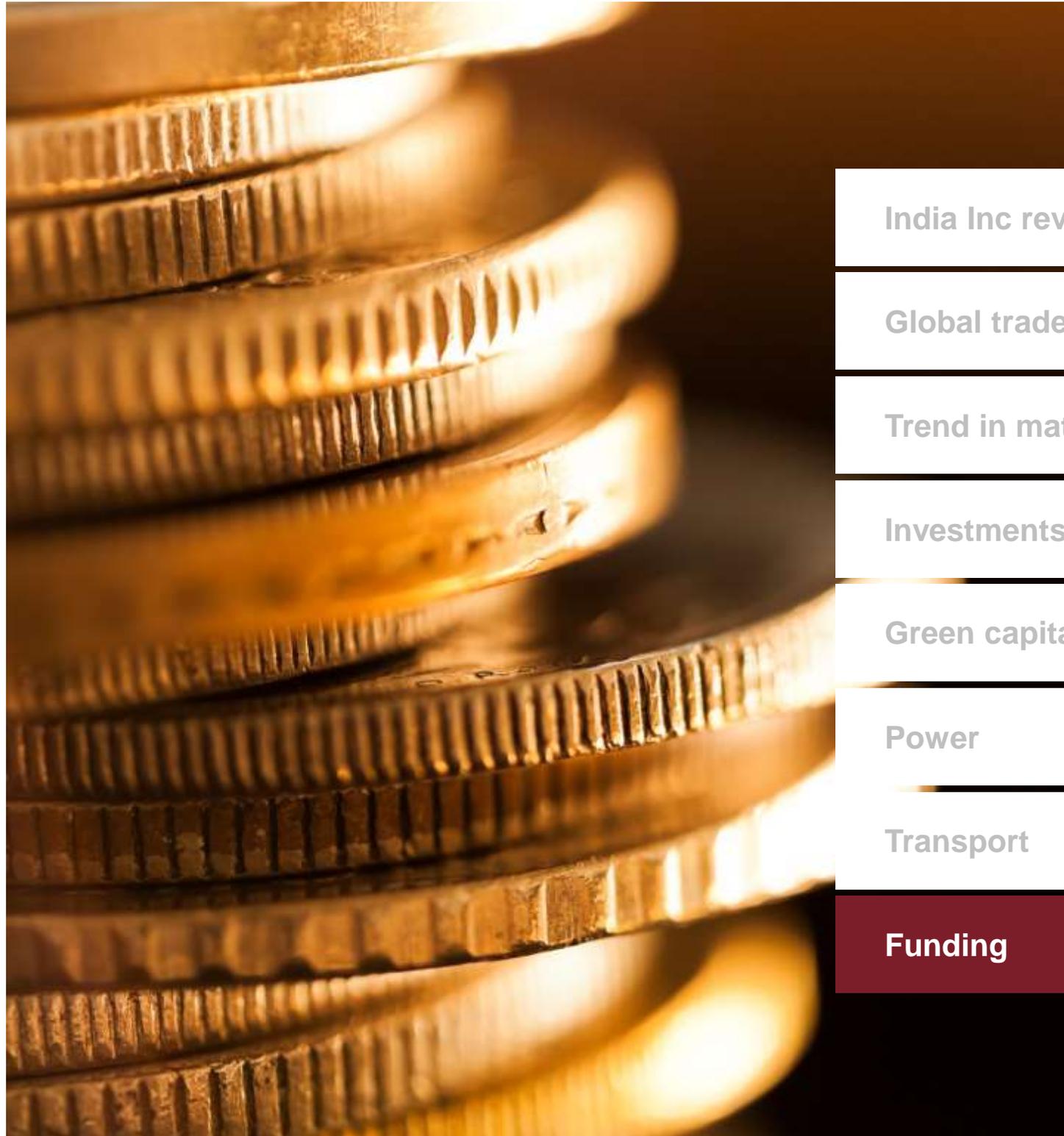
11,500-12,000 charging stations;
~100 GW battery capacity

Battery investments to aid 30% domestic procurement of batteries, PLI to aid investments

6,000-7,000 additional CNG stations;
7-8 billion litre new ethanol capacity

Grain-based ethanol blending to need government support, 3G ethanol plans may not see traction

Note: P-projected
Source: India Biennial update report, IEA, CRISIL Research



India Inc revenue trend

Global trade and India exports

Trend in material cost and profitability

Investments

Green capital expenditure

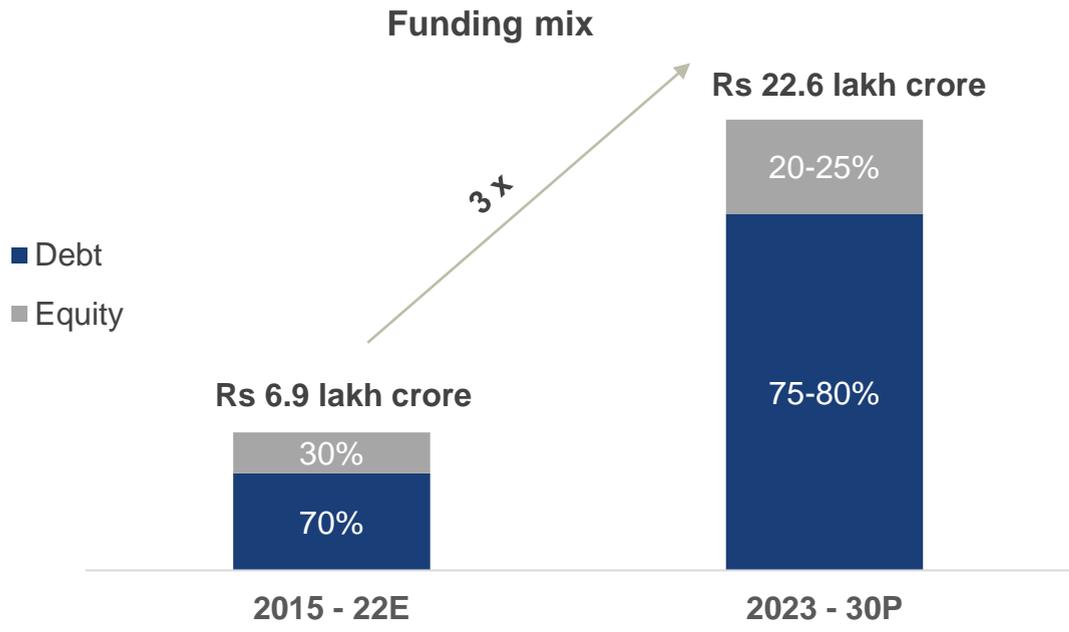
Power

Transport

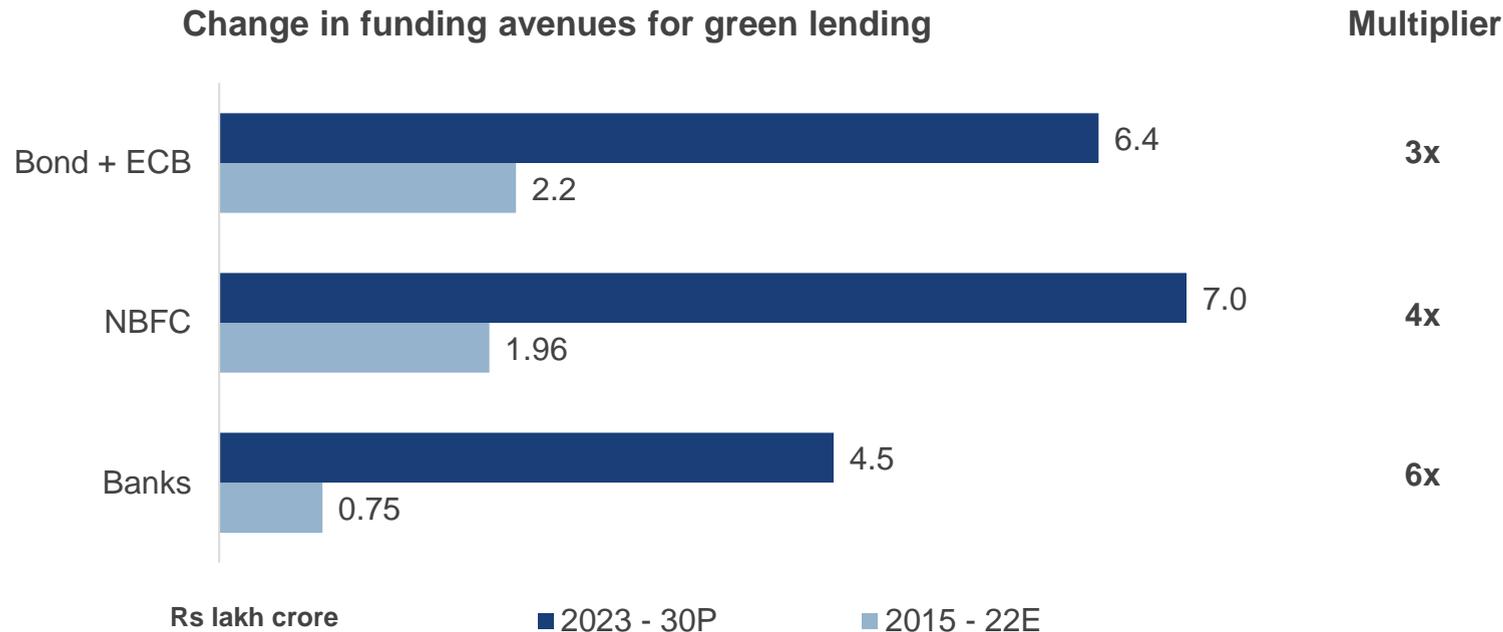
Funding

NBFCs and bonds to be the frontrunners in debt financing

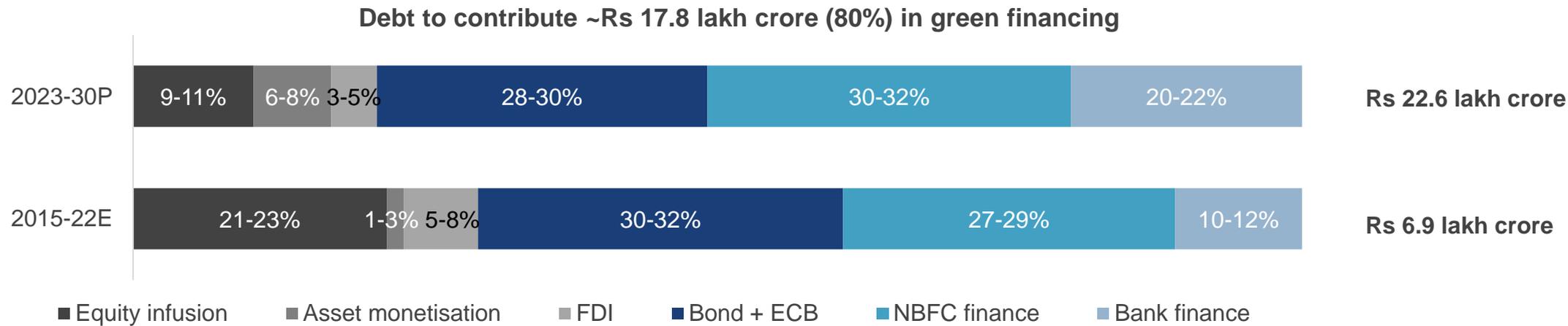
Asset monetisation needs to play a crucial role to ensure sustained equity funding



Note: *Equity includes equity infusion, FDI and asset monetisation



Note: ECB is external commercial borrowings



Note: P-projection; E-estimate; ECB-External commercial borrowings
 Source: RBI, Company reports, SEBI, Climate Bonds Initiative, SGX, CRISIL Research

Share of the power sector in infrastructure lending continues to contract

Exposure of NBFCs and banks to renewables set to increase

Financial lending	Share – March 2021	2008-14	2015-22E	2023-30P	
GDP	—	6%	6%	7-8%	CAGR
Domestic bank credit	—	17%	10%	11-13%	
Wholesale credit	57%	18%	7%	10-11%	
Infrastructure of wholesale	20%	—	20%	21%	Share
Power of Infrastructure	52%	—	56%	46%	
Non-fossil of power	7%	—	7%	24%	
Renewable energy NBFC*	15%	—	12%	10-12%	CAGR

- Share of the power sector in total infrastructure lending has declined over the past decade by 500 bps
- We believe the trend will continue until 2030

- An evaluation of plans of key lenders indicates aggression in exposure towards green project lending. Just 4-5 banks could account for 60% of total green lending

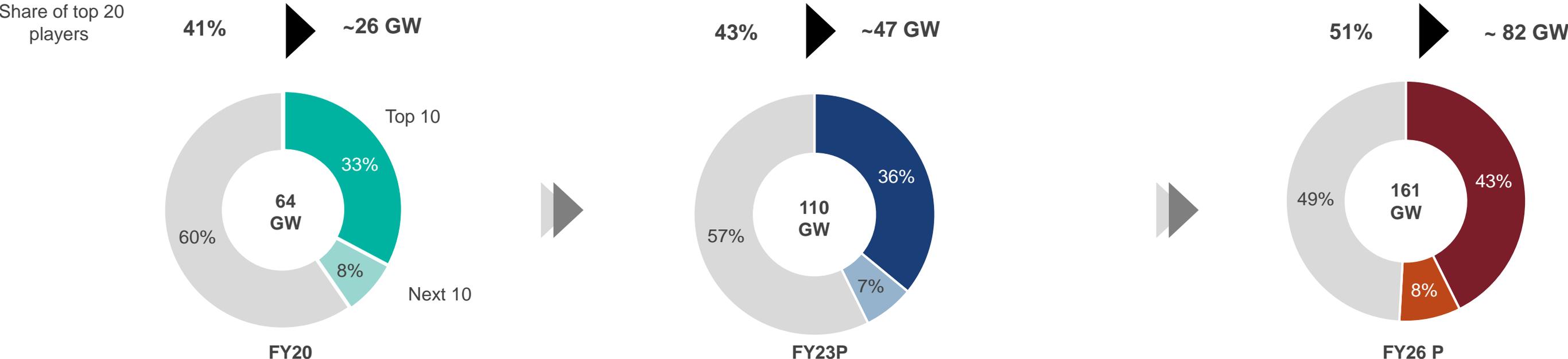
- NBFC growth driven by large, government-owned entities.
- Share of RE in these NBFCs to increase from 15% in March 2021 to 30% in March 2030

- In the past eight years, total lending to power sector (banks and NBFCs) was Rs 12.8 lakh crore and to renewables at Rs 2.7 lakh crore
- Over the next eight years, the number for renewables could rise to Rs 11.5 lakh crore vs total credit of Rs 27.1 lakh crore to the power sector

Note: *Renewable energy NBFCs include PFC, REC, and IREDA; P-Projected; E-Estimate
Source: RBI, Company reports, CRISIL Research

RE cos may raise funds via InvITs, SPACs, new models as assets mature

Fund raising opportunity evident with Rs 1.5-1.7 lakh crore of ripe assets by fiscal 2026



No major assets ripe for sale

FY20	Project age (yr)	Tariff in Rs per kwh				
		<2.5	2.5-3	3-3.5	3.5-4	>4
FY20	0-2	11%	25%	13%	0%	0%
	2-4	0%	0%	0%	0%	30%
	4-6	0%	0%	0%	0%	16%
	6-10	0%	0%	0%	0%	4%
	>10	0%	0%	0%	0%	0%

Nearly 30% portfolio ripe for sale

FY23 P	Project age (yr)	Tariff in Rs per kwh				
		<2.5	2.5-3	3-3.5	3.5-4	>4
FY23 P	0-2	7%	10%	3%	0%	0%
	2-4	2%	15%	8%	0%	0%
	4-6	2%	0%	2%	0%	19%
	6-10	0%	0%	0%	0%	27%
	>10	0%	0%	0%	0%	3%

~40% portfolio in the apt age and tariff bracket

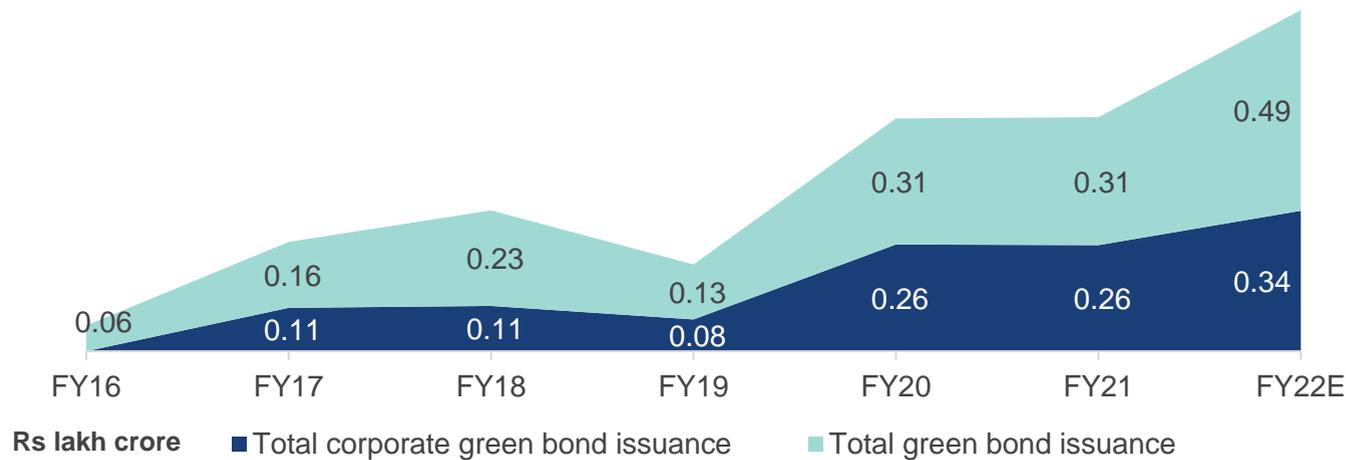
FY26 P	Project age (yr)	Tariff in Rs per kwh				
		<2.5	2.5-3	3-3.5	3.5-4	>4
FY26 P	0-2	0%	3%	0%	0%	0%
	2-4	5%	3%	1%	0%	0%
	4-6	1%	7%	4%	0%	0%
	6-10	3%	3%	11%	17%	24%
	>10	0%	0%	0%	0%	17%

Note: Top 20 players considered based RE portfolio size; P-projected; SPAC-Special purpose acquisition companies. Source: MNRE, SECI, CRISIL Research

Green bonds to play a crucial role, but there are a few monitorables

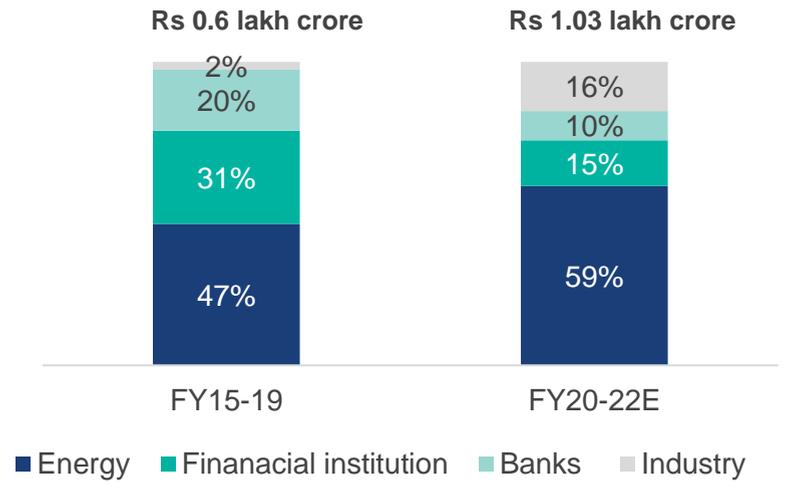
Longer tenure green bond issuances to rise in coming years

Share of corporates increase in green bond issuances



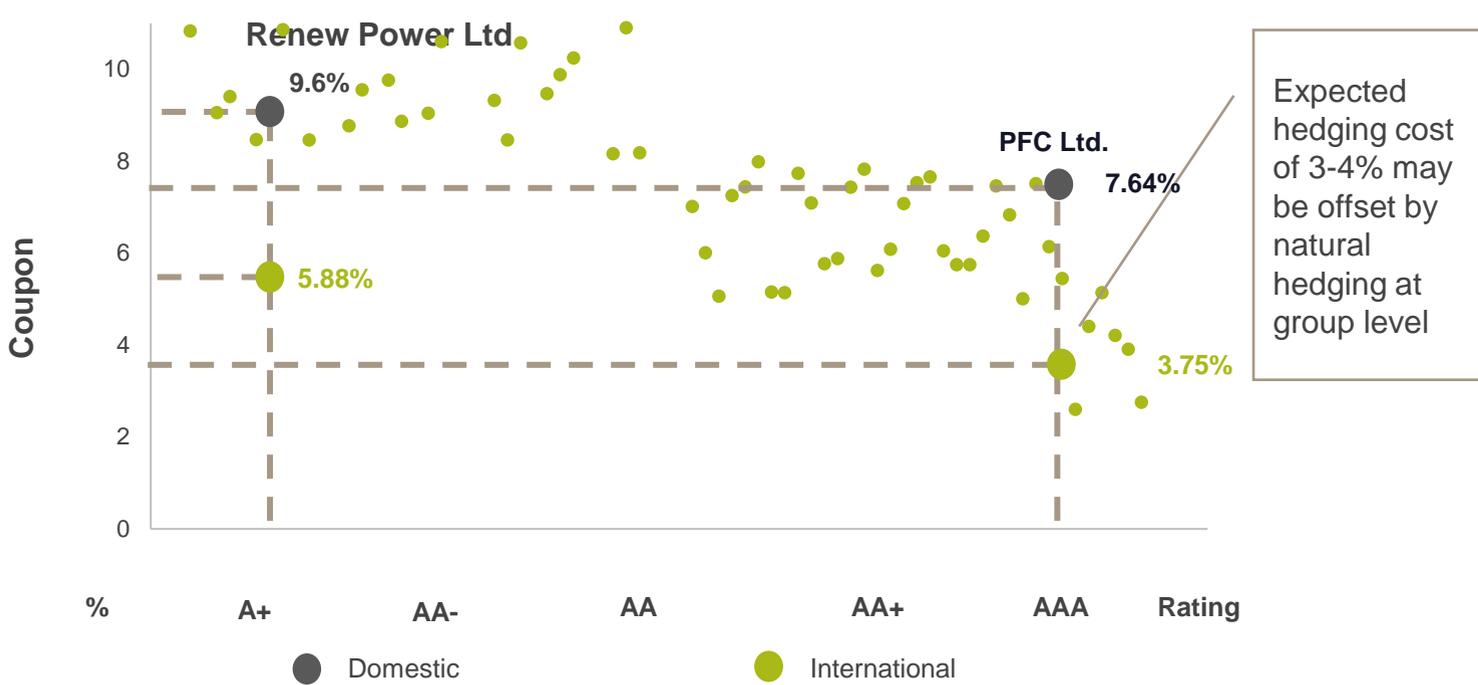
Energy contributes to a significant share in green bonds

Green bond Issuance by industry

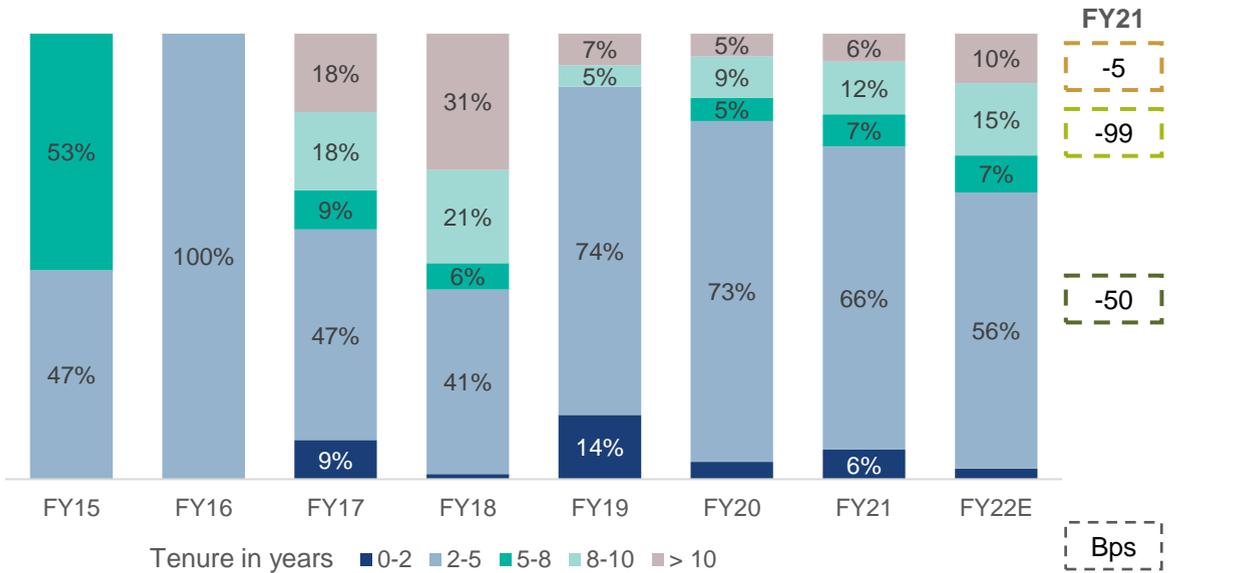


- Given lower tenure of international bonds, refinancing risk remains
- Shift to higher tenure evident in recent years
- Shaping of domestic green bond market crucial as natural hedge drops

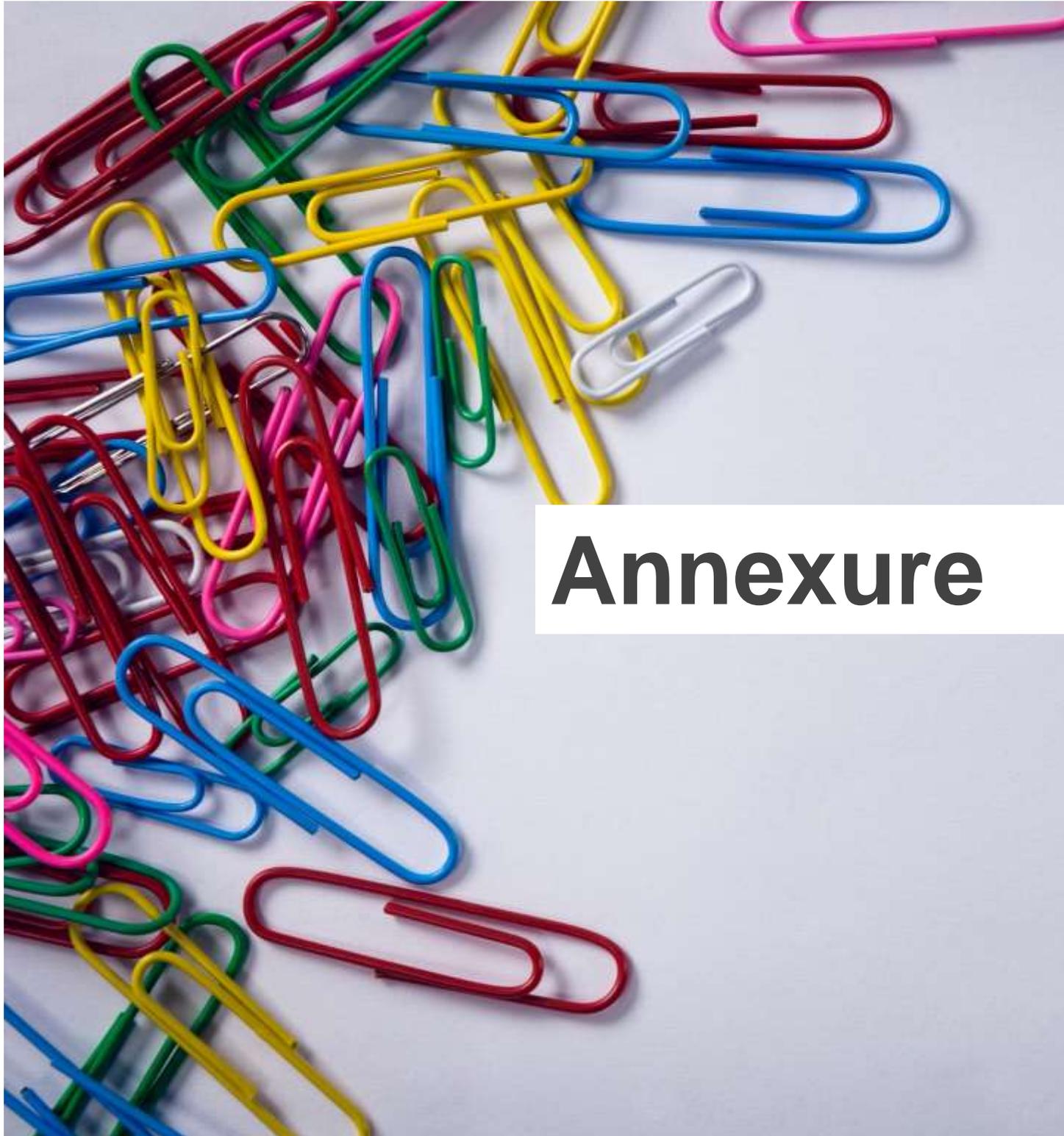
Trends in coupon rates – global vs domestic



Longer tenure global issuance pick up, 5 to 8-year maturity bonds see a big drop in coupon rates



Note: P-projected; E-estimated
Source: SEBI, Climate Bonds Initiative, SGX, CRISIL Research



Annexure

Emission scenarios – assumptions on key parameters

Parameters	Units	Pessimistic	CRISIL base-case	Optimistic
Demand CAGR (2022-2030)	%	5.3	4.3	3.8
AT&C losses (in 2030)	%	19	11.5	5
Installed power capacity [in 2030]	GW	594	651	754
Flexible fuel capacity (in 2030)	GW	300	314	310
Total power additions (2022-2030)	GW	215	272	381
Fossil power additions (2022-2030)	GW	26	40	36
Non-fossil power additions (2022-2030)	GW	189	232	345
Fossil power, share in energy generation (in 2030)	%	56	51	40
Non-fossil power, share in energy generation (in 2030)	%	44	49	60
Emissions from power generation (in 2030)	Million tonne of CO ₂	1,101	977	730

Note: Fossil power sources– coal, natural gas, diesel, lignite; Non-fossil power sources – hydro, nuclear, solar, wind, other renewable fuels

Source: CRISIL Research

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