

# ESG

## India

NIFTY-50: 24,334

April 30, 2025

### Mercury hits a new high: Adaptation + mitigation in focus

Record-high global temperatures and deteriorating climate indicators in 2024 warrant urgent global climate actions, especially in the area of adaptation. India and other COP member nations are preparing their National Adaptation Plans (NAPs) to mitigate these effects. While green technology companies will benefit from investments in climate-smart solutions, more efforts are required at the global level to close the gaps in adaptation.

#### Climate indicators demand urgent action amid record warming

2024 was likely the first calendar year where temperatures exceeded 1.5°C above the pre-industrial levels, marking the warmest year on record in the last 175 years (see Exhibit 1). While it this does not imply a failure to reach the Paris Agreement yet, as the target to maintain warming below 1.5°C/2°C refers to long-term warming trends rather than a yearly variation. All the climate indicators underscore the accelerating adverse impacts of climate change and an urgent need for enhanced climate action and resilience measures. GHG concentrations, ocean heat content and global mean sea level reached unprecedented highs (see Exhibits 2-4). Ocean acidification continued, with significant regional variations (see Exhibit 5). Glacier mass balance showed extreme negative values and Arctic and Antarctic sea-ice extents were among the lowest recorded in 2024 (see Exhibits 6-8).

#### Both adaptation and mitigation measures need to gain momentum

The world experienced a series of devastating climate events in 2024, including tropical cyclones, severe flooding, extreme heatwaves and destructive wildfires (see Exhibit 9). India, too, experienced extreme weather on 93% of days in the first nine months of the year (source: CSE). The Adaptation Gap Report 2024 underscores the critical need for enhanced global adaptation efforts, along with continued mitigation measures to address the escalating impacts of climate change. Adaptation efforts in India and other developing countries will require massive investments to the tune of US\$101 bn to US\$975 bn annually by 2030, potentially rising further by 2050 (UNEP estimate). The UN aims to enhance climate finance accessibility and mobility for adaptation by aligning these NAPs with NDCs.

#### Green/adaptation tech firms to benefit from India's climate action journey

India has launched eight national missions that are aimed at addressing climate change (see Exhibit 10). It is also preparing its National Adaptation Plan (NAP), which will be submitted to the UNFCCC by November 2025, in time for COP30. We expect companies investing in developing products/ technologies that help in decarbonization and climate adaptation in India are poised to benefit from the massive opportunity generated by the country's climate-proofing efforts. While companies in the renewables and EV sectors will continue to thrive, frontrunners will include those investing in green hydrogen, CCUS, and climate-smart solutions for agriculture, forestry, water management, biodiversity and infrastructure resilience (see Exhibit 11).

#### Quick Numbers

2024 was the first year to exceed 1.5°C above pre-industrial level temperatures

India experienced extreme weather on 93% of days in the first nine months of 2024

Developing countries will need US\$101bn to US\$975 bn p.a. by 2030 for climate adaptation

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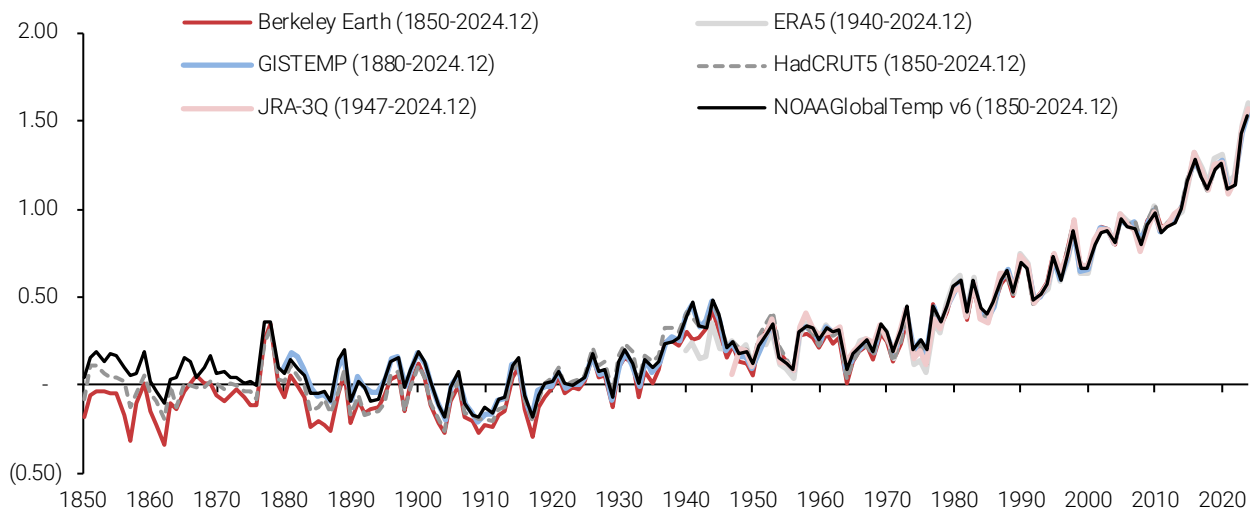
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### Annual average global mean near-surface temperature in 2024 was $1.55^{\circ}\text{C} \pm 0.13^{\circ}\text{C}$ above the 1850-1900 average

Exhibit 1: Annual global mean temperature anomalies relative to a pre-industrial (1850-1900) baseline, Calendar year ends, 1850-2024 ( $^{\circ}\text{C}$ )



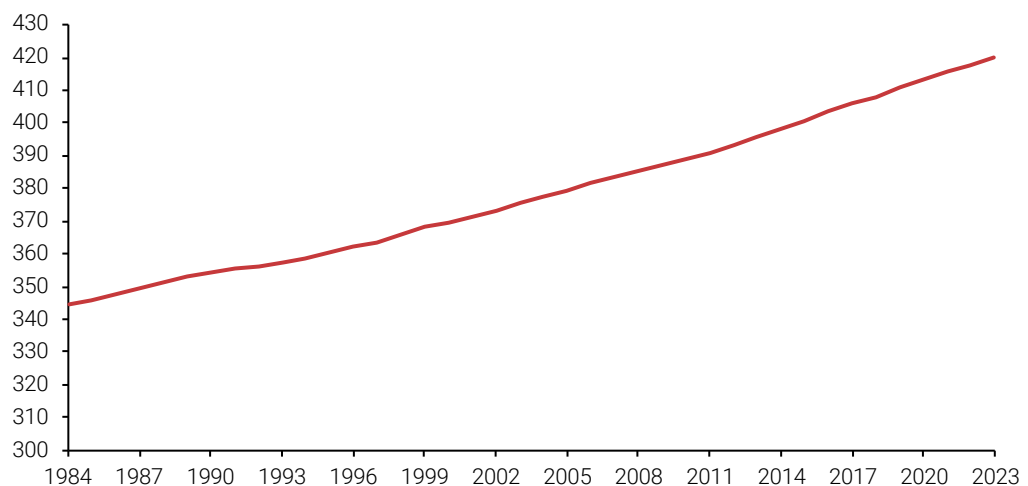
Notes:

1) Data are from the six datasets indicated in the legend.

Source: World Meteorological Organization, Kotak Institutional Equities

### Atmospheric concentration of $\text{CO}_2$ reached a new observed high in 2024

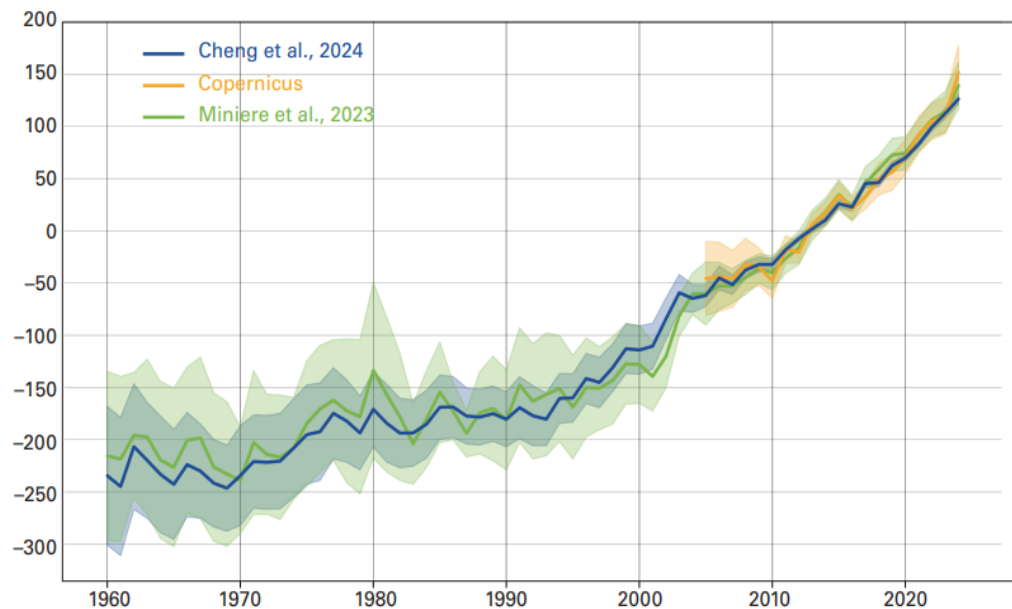
Exhibit 2: Annual mean globally averaged atmospheric mole fraction of carbon dioxide, Calendar year ends, 1984-2023 (parts per million - ppm)



Source: World Meteorological Organization, Kotak Institutional Equities

### Ocean heat content in the past eight years has set a new record every year

Exhibit 3: Annual global ocean heat content down to 2000 m depth, Calendar year ends, 1960-2024 (zettajoules)



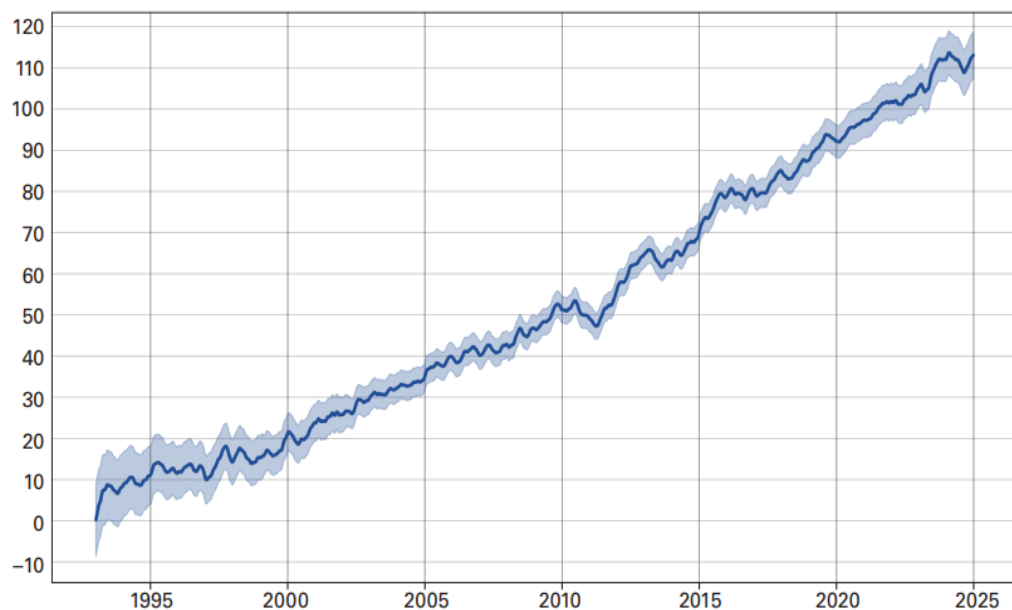
Notes:

a) The shaded area indicates the 2-sigma uncertainty range on each estimate

Source: World Meteorological Organization, Kotak Institutional Equities

### The rate of global mean sea-level rise in the past 10 years (2015-2024) was more than twice the rate in the first decade of the satellite record (1993-2002)

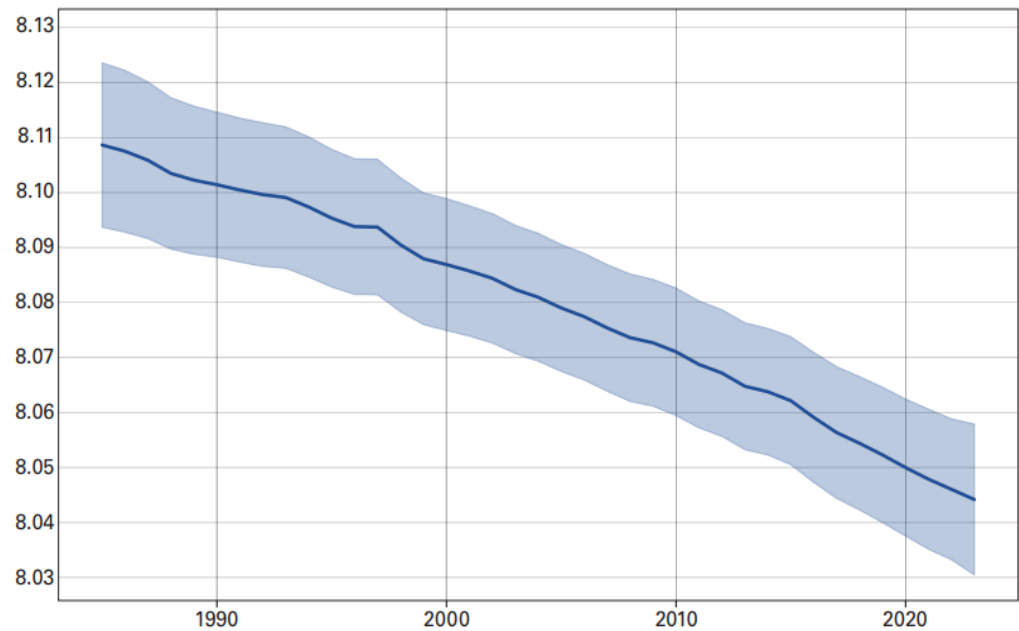
Exhibit 4: Seasonal global mean sea level change from 1993, Calendar year ends, 1993-2024 (mm)



Source: World Meteorological Organization, Kotak Institutional Equities

**Acidification of the ocean surface has continued in the past 39 years as seen in steady decrease of global average ocean surface pH**

**Exhibit 5: Annual global mean surface ocean pH, Calendar year ends, 1985-2023 (pH)**



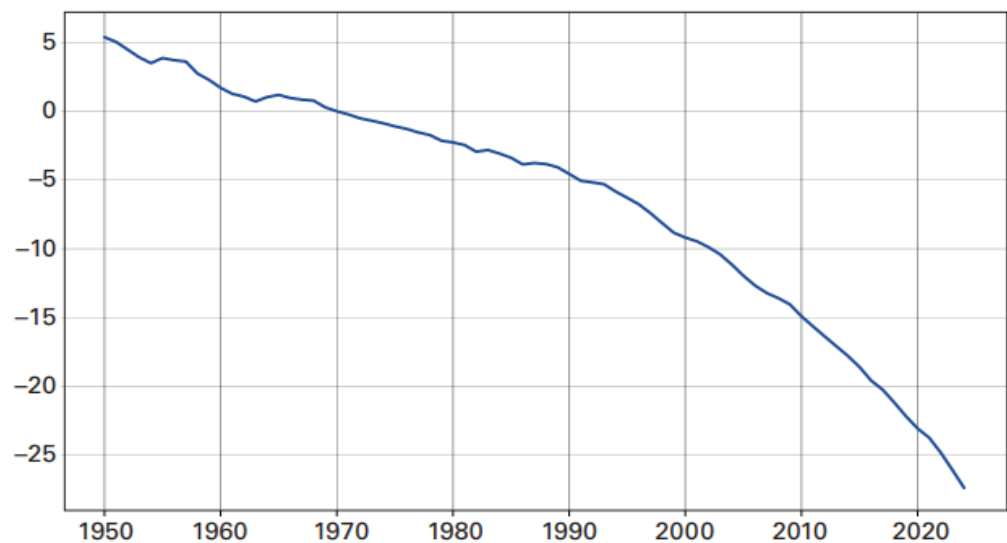
Notes:

a) The dark line is the central estimate and the shaded area is the uncertainty range

Source: World Meteorological Organization, Kotak Institutional Equities

**Glacier mass loss from 2021/2022 to 2023/2024 represents the most negative three-year glacier mass balance on record**

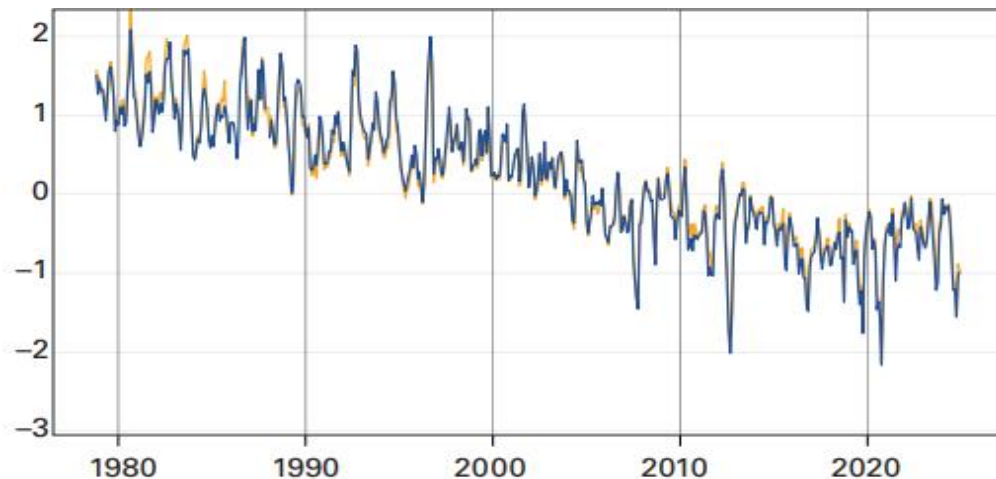
**Exhibit 6: Cumulative annual mass balance of reference glaciers with more than 30 years of ongoing glaciological measurements, Calendar year end, 1950-2024, (Metres water equivalent)**



Source: World Meteorological Organization, Kotak Institutional Equities

**The minimum daily extent of Arctic sea-ice in 2024 was the seventh lowest in the observed record since 1979**

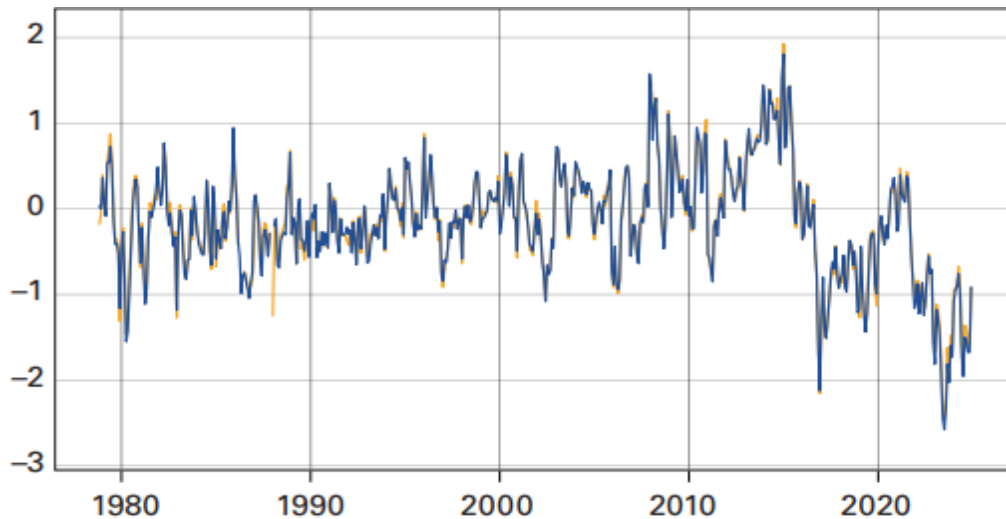
Exhibit 7: Arctic sea-ice extent difference from 1991–2020 average, Calendar year ends, 1979-2024 (mn km<sup>2</sup>)



Source: World Meteorological Organization, Kotak Institutional Equities

**The annual minimum and maximum of Antarctic sea-ice extent were each the second lowest in the observed record since 1979**

Exhibit 8: Antarctic sea-ice extent difference from 1991–2020 average, Calendar year ends, 1979-2024 (mn km<sup>2</sup>)



Source: World Meteorological Organization, Kotak Institutional Equities

## Extreme weather events in 2024 led to the highest number of new displacements recorded in a year since 2008

### Exhibit 9: Major weather and climate events witnessed across the globe, Calendar year end, 2024

USA	<ul style="list-style-type: none"> <li>Hurricanes Helene in late September and Milton in October both made landfall on the west coast of Florida as major hurricanes and had economic impacts of tens of billions of dollars</li> <li>Over 200 deaths were associated with Helene, the most associated with a mainland United States hurricane since Katrina in 2005. Helene went on to produce exceptional rainfall and extreme flooding in the interior south-east of the United States</li> <li>Drought affected many parts of the Americas; severe drought in Mexico and parts of Central America in 2023 persisted into the early months of 2024, while there was also significant drought in much of interior South America</li> <li>The Rio Negro at Manaus and the Paraguay River at Asunción both reached record low levels, and the number of wildfires in the Brazilian Amazon was the largest since 2010</li> <li>An exception to the generally dry conditions in South America was the flooding in early May in Rio Grande do Sul state of southern Brazil</li> </ul>
Chile	Suffered destructive wildfires early in the year. A fire around the city of Viña del Mar on 2–3 February resulted in over 300 deaths and damages to several thousand properties, amongst the worst losses in a wildfire anywhere in the world this century.
Africa	<ul style="list-style-type: none"> <li>Cyclone Chido displaced around 1,00,000 people destroyed homes, and severely damaged roads and communication networks, hampering relief efforts in areas already hosting large numbers of displaced people.</li> <li>Similarly, vulnerable communities in Mayotte faced increased risks because of the destruction brought by Cyclone Chido.</li> </ul>
Sahel	<ul style="list-style-type: none"> <li>From mid-year onward, an abnormally active monsoon brought major flooding to many parts of the Sahel in Africa. Almost every country in the region reported significant impacts, with flooding affecting large areas of cropland and leading to a significant number of deaths</li> <li>Between March and May, floods mostly impacted 37,38,39 equatorial East Africa, with major loss of life in countries such as Kenya and Tanzania as well as displacements, destruction of croplands and loss of livestock</li> </ul>
Southern Africa	In contrast, dry conditions in what is usually the wet season in late 2023 and early 2024 resulted in significant drought in north-western Africa and many parts of interior Southern Africa, particularly Zimbabwe, Zambia, Botswana and Namibia. The severe drought led to significant impacts on agriculture and hydroelectric production.
Afghanistan	<ul style="list-style-type: none"> <li>Afghanistan and neighbouring areas of Pakistan and the Islamic Republic of Iran suffered a succession of disasters in late winter and spring, with abnormal cold and highland snow in late February and early March 2024, then several flood events over the following months.</li> <li>Around 35,000 ha of cropland were flooded on 30 May. Several hundred deaths were reported in the flooding and the cold wave also resulted in significant loss of life</li> </ul>
Canada	<ul style="list-style-type: none"> <li>Wildfire carbon emissions were the second highest on record (2003–present), and the area burned was one of the five highest on record (1983–present)</li> <li>The western United States also had an active wildfire season. In total, over 300 000 displacements were reported across both countries</li> </ul>
Spain	<ul style="list-style-type: none"> <li>Extreme rainfall resulted in severe flash flooding in the Valencia region of Spain on 29 October, associated with an upper-level cold pool over southern Spain</li> <li>The rainfall led to exceptional flooding downstream, particularly affecting the southern part of the Valencia metropolitan area. Over 200 deaths and severe damages were reported in the Valencian Community and surrounding areas.</li> </ul>
Saudi Arabia	<ul style="list-style-type: none"> <li>Amongst the most significant events was the June heatwave in Saudi Arabia, when temperatures near Mecca reached 50 °C during the Hajj pilgrimage.</li> <li>Many casualties were reported during the pilgrimage, the large majority of which were partially or wholly attributable to the extreme heat.</li> </ul>

Source: World Meteorological Organization, Kotak Institutional Equities

## India has rolled out eight national missions aimed at addressing climate change

### Exhibit 10: National missions launched by India to address climate change

National Mission on Strategic Knowledge for Climate Change

National Solar Mission

National Mission for Enhanced Energy Efficiency

National Mission on Sustainable Habitat

National Water Mission

National Mission for a Green India

National Mission for Sustainable Agriculture

Source: Kotak Institutional Equities

## Multiple companies are expected to benefit from investments in decarbonization and climate adaptation technologies

Exhibit 11: Key listed beneficiaries of India's climate mitigation and adaptation efforts

Mitigation	Power generation	Wind power equipments	Inox Wind, Suzlon
		Solar PV module manufacturers	Alpex solar, Insolation energy, JSW (JSW Renewable Technologies), Premier Energies, Reliance (New Energy Solar), ReNew Energy (ReNew Solar), Solex energy, Tata Power (TP Solar), Vikram Solar, Waaree Energies, Websol Energy
		EPC	Sterling and Wilson renewable energy, Waaree renewable technologies
		Asset owners	Tata Power, JSW energy, NTPC, NHPC, SJVN, Adani Green
		Supply chain equipments	Borosil renewables
	Transmission & Distribution	EPC	Jyoti structures, Kalpataru Power, KEC
		Transformers	ABB, GE T&D, Hitachi energy, Siemens, TRIL, Voltamp
		Switchgear	Schneider Electric Infrastructure
		Asset owners	Adani energy solutions, Powergrid
	Storage	Battery storage	ReNew, Acme, Tata Power, NTPC
		PHS	Adani Green Energy, JSW, Tata Power
	EVs	EV manufacturers	Tata, M&M, Ola, TVS, Bajaj, Hero
		Component suppliers	Schaeffler India, Uno Minda, Varroc, Sona Comstar, Nidec, Amara Raja (chargers), Tata Power (chargers)
		Battery manufacturers	Under ACC battery PLI scheme: Reliance, Rajesh Exports, Ola Electric Outside ACC battery PLI scheme: Amara Raja Batteries, Amperex Technology, Exide Industries, Tata Chemicals,
	Battery chemicals	Chemical companies	Gujarat Fluorochemicals, Himadri Speciality Chemical, Tata Chemicals, Ami Organics, Neogen Chemicals, GHCL, Aether industries, Tatva Chintan Pharma, Balaji Amines, PCBL, Pondy Oxides and Chemicals
Green hydrogen	Producers (potential)	L&T, Reliance, Waree energies, Adani enterprises (Adani New Industries), Indian Oil Corporation, NTPC Renewable Energy	
	Component suppliers	MTAR technologies	
CCUS	Asset owners	NTPC, ONGC, Indian Oil Corporation, BHEL, SAIL	
Adaptation	Water management	Water treatment and management solutions providers	VA Tech Wabag, Ion Exchange, Thermax, Praj, ABB, Siemens
	Agricultural adaptation	Drought resistant seeds	Bayer India, Kaveri seed company, Rallis India, UPL (Advanta enterprises)
		Sustainable and regenerative agriculture	Bayer India, Godrej Agrovet, UPL (Advanta enterprises), Kaveri seed company, Rallis India, ITC, Dhanuka Agritech, Coromandel international
	Health adaptation	Heat management- cooling solutions	Voltas, Blue Star, Havells India, Hitachi, Crompton Greaves, Whirlpool, IFB, LG, Daikin, Haier, Godrej, Panasonic, TCL, V-guard industries (voltage stabilizers)
Financial mechanisms	Climate insurance	ICICI Lombard, HDFC ERGO, Bajaj Allianz general insurance, Tata AIG general insurance, Cholamandalam MS General Insurance, Future Generali India Insurance, Go Digit General Insurance, IFFCO Tokio General Insurance	

Source: Kotak Institutional Equities

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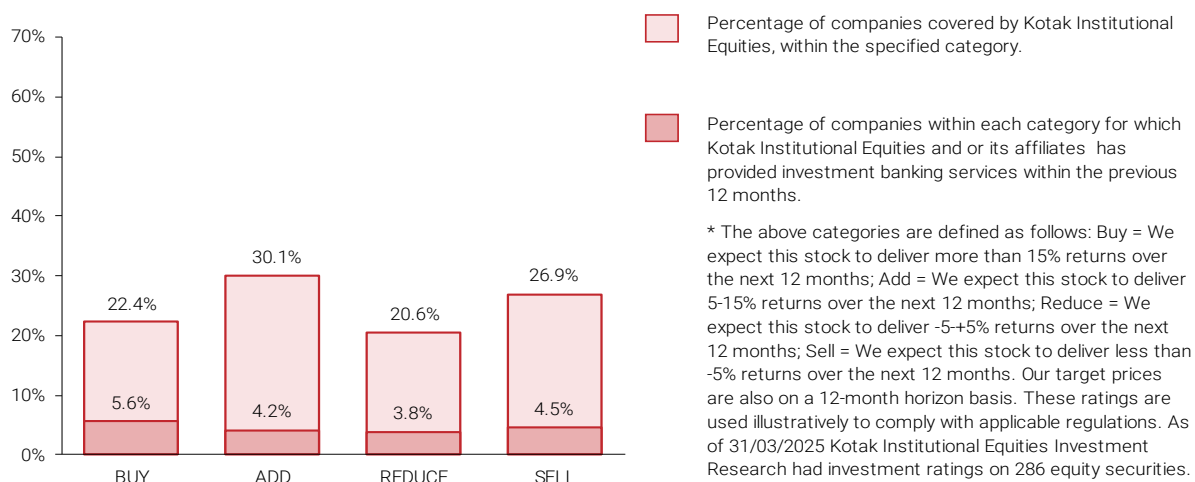
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In absence of response/complaint not addressed to your satisfaction, you may lodge a complaint with SEBI at SEBI, NSE, BSE, Investor Service Center | NCDEX, MCX. Please quote your Service Ticket/Complaint Ref No. while raising your complaint at SEBI SCORES/Exchange portal at <https://scores.sebi.gov.in>. Kindly refer <https://www.kotaksecurities.com/contact-us/> and for online dispute Resolution platform - [Smart ODR](#)