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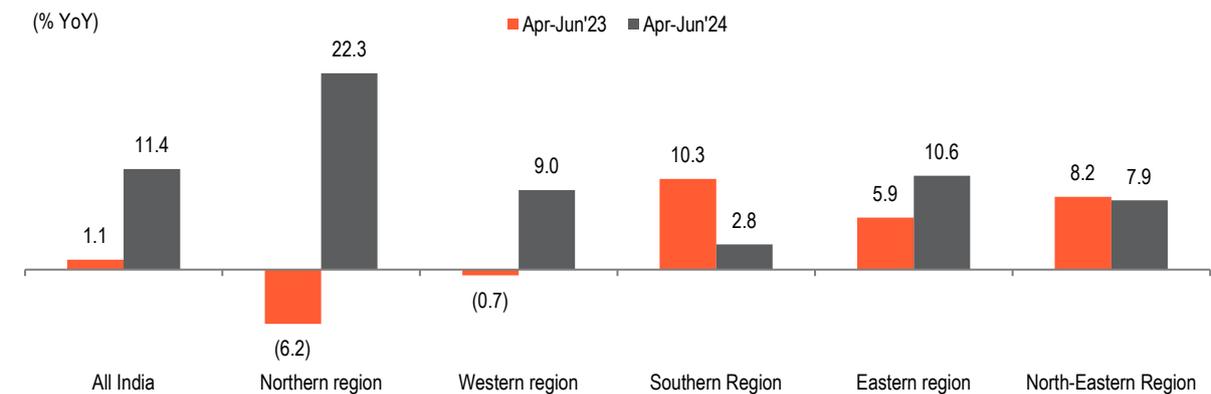
India’s ongoing heatwave

India is in the midst of a sweltering heatwave, which is the longest ever recorded in the country. While the onset of the monsoon has led to a fall in temperatures in some parts of the country, the northern part still awaits a meaningful respite from the heat-spell. Due to the ongoing heatwave, there has been an increase in both demand for FMCG items as well as durable goods, with major industry players betting on double-digit growth in sales. Prices of these products seem to be crawling up, even as early signs point to a ramp-up in production. Perhaps, the major impact of the ongoing heatwave will be felt on inflation amidst a sharp increase in prices of staple vegetables such as tomato, onion and potato. Due to the heatwave, production of these perishables has been impacted which is also reflected in lower mandi arrivals. As a result, prices of these commodities have seen a significant uptick which is expected to keep food inflation elevated in the near-term.

Energy demand has increased sharply:

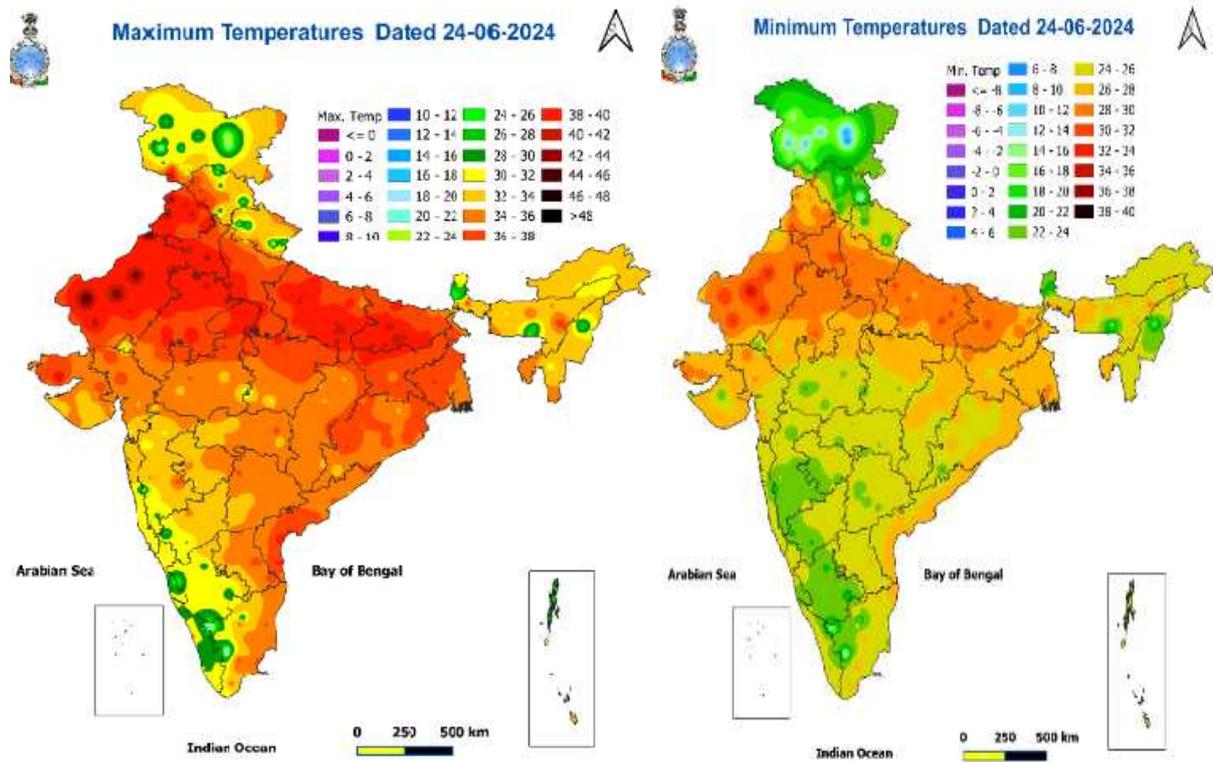
Due to the severe heatwave in the country, power demand witnessed a sharp surge. There was a sharp pickup in electricity demand at 11.4% between Apr-Jun’24, compared with an increase of 1.1% in the same period last year. Region wise, electricity demand from the northern region rose steeply by 22.3% compared with a decline of 6.2% last year. Power demand in other regions also witnessed a significant uptick. In fact, barring the southern and north-eastern region, power demand in all other regions was higher compared to last year.

Figure 1: Power demand in India surges



It must be noted that parts of northern and central India have been reeling under intense heatwave conditions. Both maximum and minimum temperature recorded in several parts of northern India remained 5-8°C and 4-7°C above normal temperature even in Jun’24.

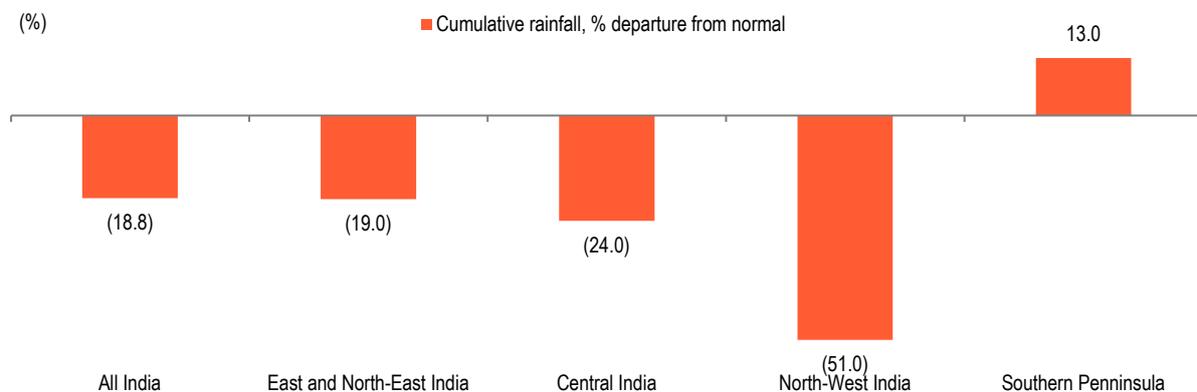
Figure 2: Above normal temperature in most parts of the country



Source: IMD, Bank of Baroda Research | Note: Data as of 24 June 2024

While there was an early onset of monsoon over the southern part of the country, the progress and spatial distribution of rains has not been even. For the country, the South-West monsoon is 19% below LPA. However, region wise, while the southern peninsula has received rainfall which is 13% above LPA, the monsoon in other regions has been lower. ***In fact, rainfall in north-western part of India which has been under a relentless heatwave is 51% below LPA.***

Figure 3: Rainfall distribution has been uneven



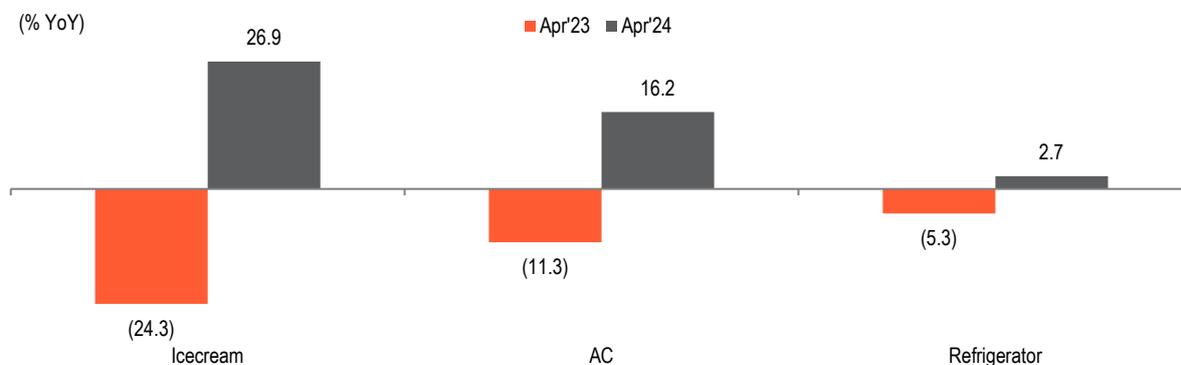
Source: CEIC, Bank of Baroda Research | Note: Data as of 26 June 2024

Impact on production of certain items:

Production of items such as ice cream, air conditioners and refrigerators has seen a pickup in Apr'24 due to the intense heatwave. Production of ice cream has jumped by over 26% in Apr'24, ACs by

16.2% and refrigerators by 2.7%. It is to be noted that production for these products was much lower last year in the same period as unseasonal rainfall in parts of the country had led to lower temperatures. It must also be prudent to mention here that this is just preliminary data for Apr'24, and the full impact of heatwaves would be better reflected in production numbers for May-Jun'24.

Figure 4: Production of ice-cream, ACs and refrigerators has picked up



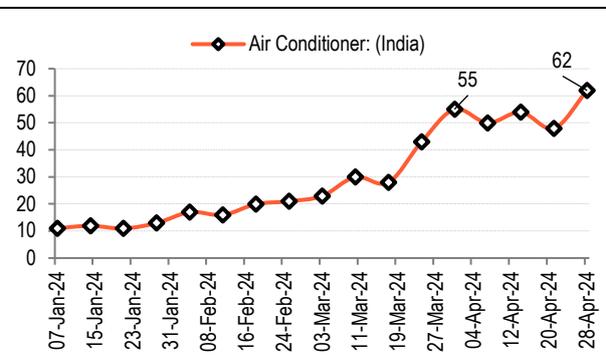
Source: CMIE, Bank of Baroda Research

Higher demand reflected in google trends

While we will have to wait for Q1FY25 interim results to assess the impact of heatwave on sales of related products, a few major players in the segment have signaled robust sales in Apr-Jun'24. Ice cream manufacturers are expecting sales to rise by over 40% in Q1, while demand for ACs is expected to increase by over 50-60% to touch a record high.

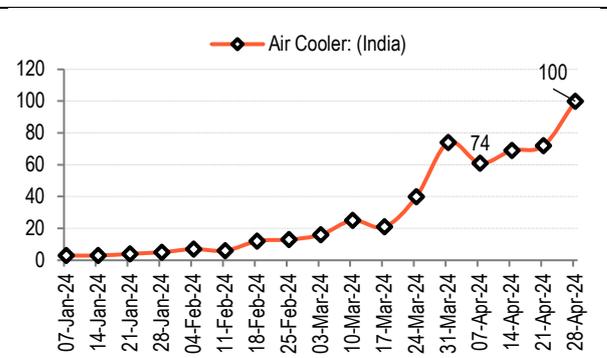
To assess this, we look at the google trends data which helps to get an understanding of demand based on searches on the google search engine, on a real time basis. Based on popularity of searches, some interesting results emerge. The **google trend for items such as battery-operated fans peaked towards end of May. For air coolers, the scale reached its peak towards end of Apr'24. For power inverter the scale peaked towards end of May'24. These trends though not conclusive, reflect that certain industries may witness transient momentum due to adverse weather conditions.** 100 scale represents peak of popularity while 0 is least popular while reading the google trend data.

Figure 5: Google trend data for AC



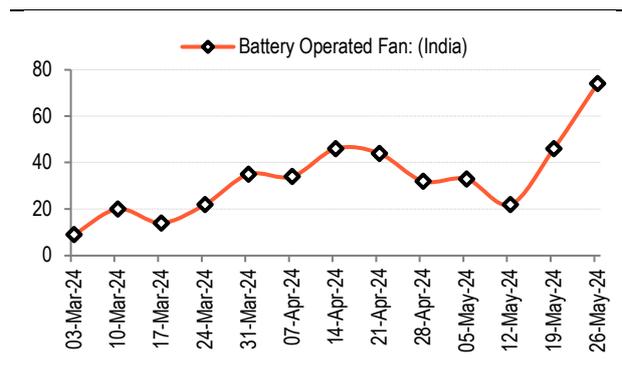
Source: Google trends, Bank of Baroda Research

Figure 6: ...for Air cooler



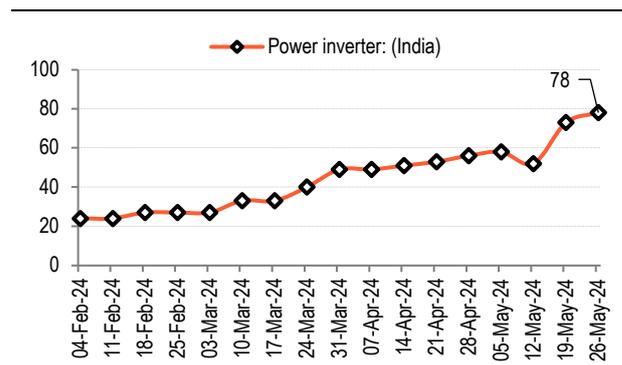
Source: Google trends, Bank of Baroda Research

Figure 7: ...for battery operated fans



Source: Google trends, Bank of Baroda Research

Figure 8: ...for inverter



Source: Google trends, Bank of Baroda Research

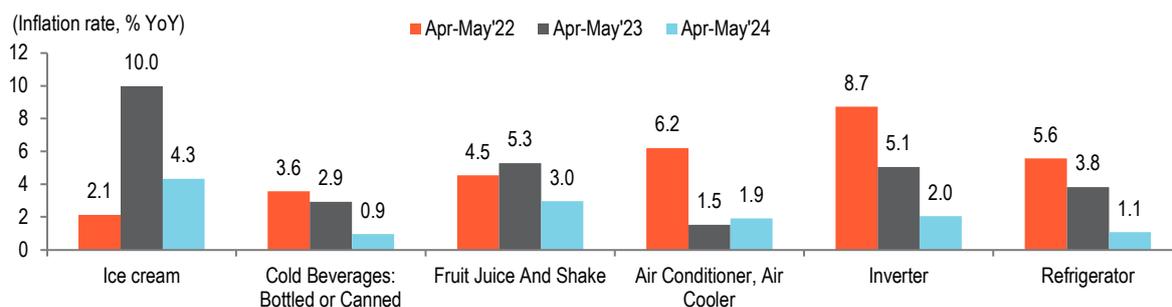
Do prices reflect any impact of heatwave?

With increased interest in these items, we next attempt to assess whether there has been an increase in the prices. For this, we study the trend in inflation in some items of consumption and durable goods from the CPI basket. The caveat here is that supply side issues as well as input prices also have an impact on prices. However, for our analysis, we assume that the increase in prices is demand driven.

Figure below gives the cumulative inflation in some of the items which are likely to see an increase in demand due to the heatwave. Among major FMCG items, cumulative inflation rate in items such as ice cream, fruit juices and shakes does not provide a conclusive picture. For ice cream, the inflation rate is impacted by an elevated base. However, the inflation in this category is still above 4%.

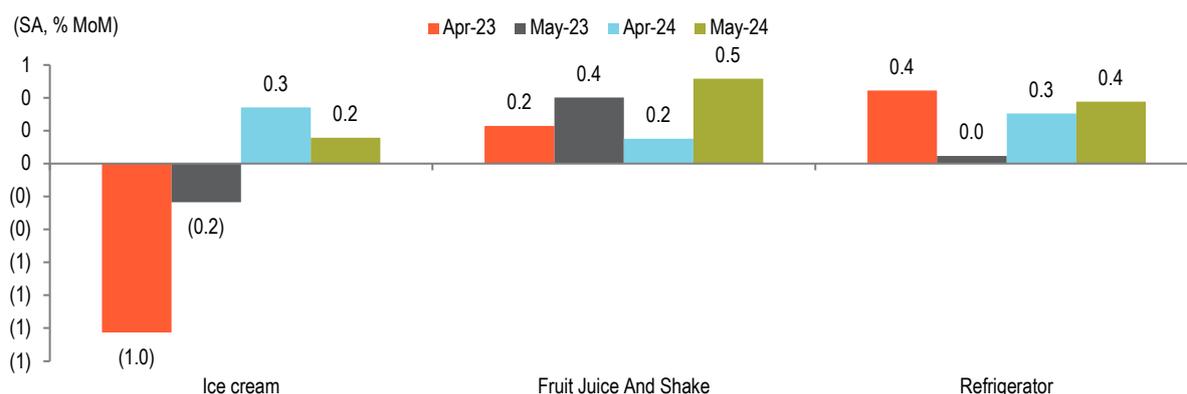
To better assess this, we have used the seasonally adjusted series. For items such as ice cream generally the increased consumption during summer bumps up the prices. **However, this year even adjusting for this seasonality, the sequential momentum is higher than last year, both in Apr'24 as well as May'24.** A part of it can be attributed to rising milk prices, which in turn are impacted due to rising fodder prices on account of adverse weather conditions. Apart from ice cream, even the **seasonally adjusted sequential momentum for fruit juices and shakes and refrigerators has seen a pickup**, which was not visible in the cumulative data. However, prices of air conditioners/air coolers have shown momentum in terms of cumulative inflation, which is reflective of higher demand for these durable goods.

Figure 9: Cumulative inflation



Source: CEIC, Bank of Baroda Research

Figure 10: Sequential momentum



Source: CEIC, Bank of Baroda Research

Heatwaves and vegetable price spiral:

Vegetable price spiral is a seasonal thing during summer months, when harvesting period nears its end. However, this year particularly, the TOP items which are **tomato, onion, potato (TOP)** have exhibited significant volatility, and the steepening of its trajectory intensified during Apr-Jun period which coincided with heatwave alerts issued by IMD. Interestingly, arrival of TOP has been impacted which is also reflected in their rising Mandi prices. State wise arrival picture also corroborated with heatwave conditions. *For example, States where heatwave conditions prevailed in pockets also witnessed sharp deceleration in arrival of these vegetables.*

Table 1: Arrivals quantity of TOP shows moderation

Arrival Quantity (Tonnes)	Apr-Jun'23	Apr-Jun'24	Harvesting Period	
			Dec-Jun'23	Dec-Jun'24
Tomato	9,82,108	8,00,210	22,48,250	17,77,263
(% change)		-18.5		-20.9
			Jan-May'23	Jan-May'24
Onion	45,68,971	32,37,635	82,04,640	65,33,823
(% change)		-29.1		-20.4
			Dec-Mar'23	Dec-Mar'24
Potato	29,24,458	25,64,100	68,91,949	53,86,707
(% change)		-12.3		-21.8

Source: upag.gov.in, Bank of Baroda Research

The arrival data shows that both in the harvesting period and during the period of Apr-Jun when heatwave conditions aggravated, the arrival quantity of TOP has been impacted, showing significant decline. The moderation in quantity was reflected in rising prices. For Potato and Onion, prices have risen considerably during Apr-Jun period by over 80%. For Potato most of the increase in prices was witnessed after the harvesting period when the arrival of fresh crops stopped.

Table 2: Prices have equally shown an uptick

Mandi Modal Price, Rs/quintal	Apr-Jun'23	Apr-Jun'24	Harvesting Period	
			Dec-Jun'23	Dec-Jun'24
Tomato	1,361	1,872	1,269	1,734
(% change)		37.6		36.6
			Jan-May'23	Jan-May'24
Onion	875	1,657	1,088	1,421
(% change)		89.4		30.6
			Dec-Mar'23	Dec-Mar'24
Potato	969	1,756	979	933
(% change)		81.1		-4.7

Source: upag.gov.in, Bank of Baroda Research

State wise arrivals picture:

For tomato, arrivals in States such as **Karnataka, Andhra Pradesh and Gujarat, have fallen considerably**. Other States such as MP and Odisha have also seen far lower arrivals during Apr-Jun'24 period compared to the same period of previous year. A part of it may be attributable to heatwaves or unseasonal rains.

Table 3: Tomato arrival statistics state wise

States, Arrival Quantity of Tomato, Tonnes	Apr-Jun'23	Apr-Jun'24	Change	Harvesting Period		Heatwave/Unseasonal rain situation
				Dec-Jun'23	Dec-Jun'24	
Andhra Pradesh	1,04,762	78,355	-26,406	1,12,757	96,857	-
Chhattisgarh	50,583	39,273	-11,310	1,33,991	95,984	-
Gujarat	78,532	63,915	-14,617	1,70,599	1,53,110	-
Karnataka	1,41,100	1,12,258	-28,842	2,57,810	2,45,035	Rainfall
Madhya Pradesh	10,844	127	-10,716	28,167	5,364	Heatwave in pockets
Maharashtra	1,45,327	1,12,698	-32,629	2,76,784	2,21,201	Rainfall
Odisha	15,386	15,642	256	38,357	37,352	Heatwave in pockets
Uttar Pradesh	1,53,421	1,41,195	-12,226	5,01,049	3,53,652	Yes
West Bengal	15,517	17,539	2,022	46,964	48,909	Yes

Source: upag.gov.in, Bank of Baroda Research, Note: Highlighted States account for major share in tomato production, The total do not add up as other States whose share in production is low have not been incorporated.

For Onion, arrivals in major producing states such as Madhya Pradesh have been disrupted due to heatwave conditions in some pockets of the region. For Karnataka and Maharashtra, unseasonal rains might have had an impact on arrivals.

Table 4: Onion arrival statistics state wise

States, Arrival Quantity of Onion, Tonnes	Apr-Jun'23	Apr-Jun'24	Change	Harvesting period		Heatwave/Unseasonal rain
				Jan-May'23	Jan-May'24	
Gujarat	3,10,079	3,55,550	45,471	10,46,494	11,53,827	
Karnataka	2,35,946	1,75,702	-60,244	4,25,409	3,45,486	Rainfall
Madhya Pradesh	5,81,141	3,74,706	-2,06,435	6,39,664	3,17,692	Heatwave in pockets
Maharashtra	20,55,146	14,15,237	-6,39,908	38,21,851	29,92,004	Rainfall
Rajasthan	1,14,421	80,724	-33,697	2,04,423	1,35,720	-

Source: upag.gov.in, Bank of Baroda Research, Note: States which account for major production of Onion have been taken

For potato, Uttar Pradesh, the largest potato producing State has noticed significant drop in production Apr-Jun'24 period. The northern-state has also experienced heatwave conditions during the same period.

Table 5: Potato arrival statistics state wise

States, Arrival Quantity of Potato, Tonnes	Apr-Jun'23	Apr-Jun'24	Change	Harvesting Period		Heatwave/Unseasonal rain
				Dec-Mar'23	Dec-Mar'24	
Bihar	17,697	21,184	3,487	1,38,663	38,884	Heatwave in pockets
Gujarat	1,74,663	1,48,367	-26,296	2,66,956	2,52,529	-
Madhya Pradesh	37,704	8,936	-28,768	1,50,688	1,13,060	Heatwave in pockets
Uttar Pradesh	18,39,343	16,18,962	-2,20,381	47,73,193	33,29,026	Yes
West Bengal	1,09,810	1,17,743	7,933	1,77,987	1,64,191	Yes

Source: upag.gov.in, Bank of Baroda Research, Note: States which account for major production of Potato have been taken

Thus, putting the pieces of the puzzle together, it is clear that TOP will TOP the CPI chart.

Impact on Inflation:

Heatwave in the country seems to be persisting longer than usual with IMD alerts for certain northern States and Eastern part of India still continuing. These are also the major TOP producing States. Further, harvesting period is also nearing its end, so there will be a lag in fresh arrivals. We expect pressure on headline CPI to continue and **do not foresee food inflation to dip below 7.5-8% in the next two-three months**. Thus, weather vagaries may lead to CPI overshooting RBI's projection both in Q1 as well as Q2FY25.

Impact on travel and tourism:

With the ongoing heatwave conditions in the country, the travel and tourism industry too has been impacted. It must be mentioned here that due to the heat spell; travelers tend to prefer cooler destinations both domestically and abroad. The figure below shows that there has been a moderation in air passenger traffic for both domestic as well as international travel in FY25. However, it must be noted that there is a negative base effect as travel picked up sharply in the period after the pandemic amidst emergence of “revenge tourism”. Also, there might be a decline in interest in travel to destinations which are reeling under the impact of the heatwave, which can also explain some part of the deceleration. On the other hand, there has been a surge in tourists in hill stations closer to metro cities such as Delhi. To gauge this, we have looked at the fuel consumption data. While there has been an increase in petrol consumption this year, diesel consumption has moderated. It must be mentioned here that this data is only indicative, and that it will also include essential travel for business etc.

Figure 11: Air passenger traffic

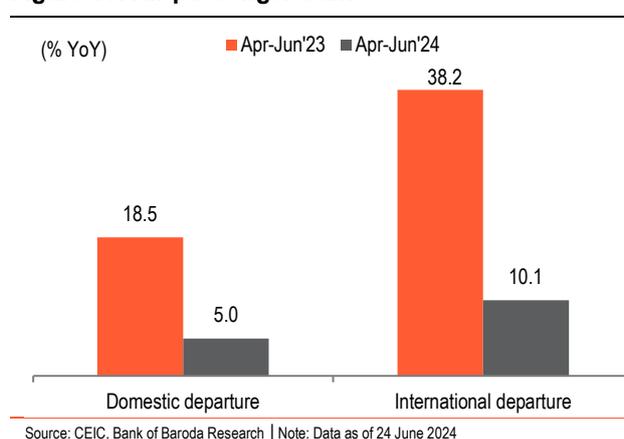
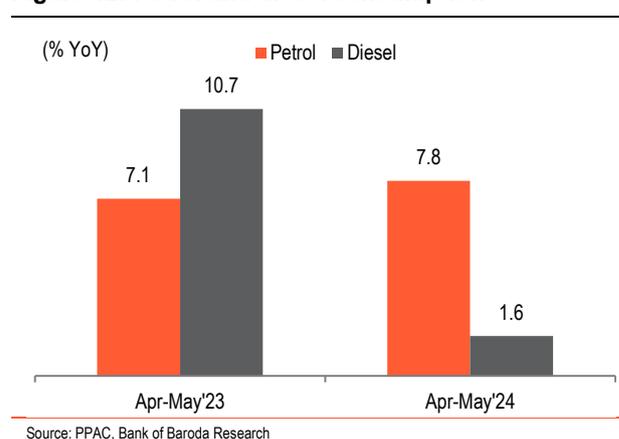


Figure 12: Petrol and diesel consumption



Conclusion:

- Heatwave conditions continued in northern, central and eastern parts of India.
- Impact was visible in terms of lower arrivals of crops in states impacted by severe heatwave conditions.
- This is likely to keep food inflation elevated for longer.
- Transient bump in demand for products such as AC, air cooler, refrigerator will be visible, whose Q1 results is expected to reflect the same.
- Other sectors such as travel witnessed some lethargy due to conscious effort of staying indoors to avoid heat.

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