

# ESG

## India

NIFTY-50: 22,648

May 03, 2024

### PWM rules: How vulnerable are consumer companies?

India has introduced mandatory regulations for the recycling and reuse of plastic packaging starting from FY2025 to control the plastic waste menace. Note that the country is the third-largest plastic waste generator globally. While, in terms of handling the plastic waste problem, these new laws may put India ahead in the global league, on the other hand, they will increase the packaging costs of consumer staple companies. In our view, Britannia, Colgate and Nestle will be the most impacted companies in our coverage.

#### New PWM rules will be implemented from FY2025

India will implement the mandatory norms for the recycling and reuse of recycled content for producers, importers and brand-owners of plastic packaging (excluding MSMEs) in a phased manner from FY2025 (see Exhibit 4 and Appendix A1). The new rules are a part of the Plastic Waste Management (Amendment) Rules 2022 (PWM), which aim to boost secondary plastic markets, by: (1) pushing the supply via the EPR norms (implemented in FY2022) and (2) increasing demand by enacting the new norms to create a circular plastic economy and address the rising concerns about plastic pollution.

#### Consumer companies are vulnerable; costs are set to rise

Based on our estimates, the consumer staple companies under KIE coverage spend, on average, 5-8% of their revenues on packaging and remain highly reliant on plastics. We note that the efforts required by companies to comply with the new norms will vary based on the category of plastic packaging required for their products. In our coverage universe, GCPL, Marico and VBL have so far remained at the forefront of aligning with the new PWM rules using a 3R (Reduce, Recycle and Reuse) approach. Others, such as Colgate, Jyothy Labs and Nestle India, are yet to report any significant progress on a relative basis. Companies so far have optimized most of their packaging costs by reducing the intensity of plastic usage. However, little progress has been made by most of them in recycling/using the recycled content for packaging. This could result in higher costs going forward.

#### Food and oral care to be the most impacted, in our view

We believe that Britannia, Colgate and Nestle will be the most impacted, while GCPL, ITC, Jyothy Labs and VBL will remain the least impacted by the new PWM rules. Our assessment is based on relative overall revenue-based exposure of companies to five key variables: plastic, transparent plastic, food-grade plastic, flexible plastic and MLP. We believe that the cost increase will be higher for companies using a greater proportion of: (1) hard-to-recycle flexible plastics and MLP and (2) categories that require the use of higher-grade recycled plastic that trade at a 40-60% premium to virgin plastics—food and beverages and products that require transparent packaging.

#### The boost to recycling will have aftereffects across multiple sectors

Plastic recyclers such as Ganesha Ecosphere and innovative packaging companies such as EPL, Uflex and ITC, which can provide solutions for making plastic recyclable, develop products using PCR and offer economical alternatives to plastics, will be the key beneficiaries of the roll-out of the new PWM rules. We expect the plastic recycling industry to witness consolidation and the emergence of a few large players. Chemical recycling (currently uneconomical with products being sold at ~2-3 times their virgin equivalent) is likely to emerge as the end-of-life solution to plastics in the long run. Being the early entrants, Reliance and Uflex may lead the adoption in India.

#### Quick Numbers

India generates 4.1 mn tons of plastic waste annually

Packaging costs of consumer companies stand at 5-8% of their revenues on average

Virgin-equivalent recycled plastic trades at a 40-60% premium to virgin plastic

#### Related Research

→ ESG: Ban on single-use plastic

[Full sector coverage on KINSITE](#)

## Table of Contents

<b>New plastic waste management rules make consumer companies vulnerable .....</b>	<b>3</b>
India has rolled out new norms to endorse plastic recycling and reuse starting from 2025.....	3
Managing plastic waste remains crucial; alternatives uneconomical and/or environmentally intensive.....	6
Consumer companies vulnerable to roll-out of new rules; recyclers and packaging companies to gain.....	9
<b>Britannia, Colgate and Nestle—the most impacted by the new norms .....</b>	<b>12</b>
KIE’s 5-point framework for assessing exposure risk from new PWM rules .....	12
Britannia, Colgate and Nestle most vulnerable to adverse impact of new PWM norms .....	13
<b>Cost optimization by reducing plastic intensity behind; costs set to rise .....</b>	<b>18</b>
Large packaging users collaborating to create a circular economy .....	18
3R approach to migrate to the new plastic waste management rules .....	18
<b>Recycling boost to have impact across multiple sectors .....</b>	<b>23</b>
Emergence of large plastic recyclers in due course; Ganesha Ecosphere - a key listed beneficiary.....	23
Innovative packaging companies set to gain.....	25
Cement sector witnesses increase in AFRs; road developers witness plastic blending in raw material .....	27
Conclusion .....	29
<b>Appendix 1: PWM rules—Other general provisions .....</b>	<b>30</b>
<b>Appendix 2: EU plastic recycling norms.....</b>	<b>33</b>
<b>Appendix 3: Plastics: Defining the basic concepts .....</b>	<b>36</b>
<b>Appendix 4: SUP ban regulation.....</b>	<b>39</b>
<b>Appendix 5: Alternative plastics—biodegradable and compostable plastics .....</b>	<b>41</b>
<b>Appendix 6: Types of plastic recycling .....</b>	<b>44</b>
<b>Appendix 7: Plastic waste related initiatives taken by consumer companies .....</b>	<b>45</b>
Britannia Industries.....	45
Colgate.....	46
Dabur India.....	49
GCPL Products (GCPL) .....	51
Hindustan Unilever (HUL).....	52
ITC.....	55
Jyothy Laboratories .....	58
Marico .....	59
Nestle India .....	61
Varun Beverages (VBL) .....	63

# 1

## New plastic waste management rules make consumer companies vulnerable

We believe that consumer staples companies will witness an increase in packaging costs as the new rules under the PWM regulations are implemented from FY2025. The cost increase will be higher for companies that use a greater proportion of (1) hard-to-recycle flexible plastics and MLP and (2) are operating in categories that require the use of higher-grade (virgin equivalent) recycled plastics (e.g., food & oral care category) and transparent packaging. In response to the new rules, companies will have to rethink and redesign their product packaging, especially for low-price point SKUs in which the cost pass-through will be difficult compared with premium-priced SKUs. In the Indian scenario, we foresee plastic recycling and reuse to pick up after the new rules come into effect as alternative packaging materials have higher economic and/or environmental costs.

### India has rolled out new norms to endorse plastic recycling and reuse starting from 2025

India rolled out the Plastic Waste Management (Amendment) Rules 2022 to foster secondary plastic markets, by strengthening policies to: 1) push supply (through EPR) and 2) pull demand (via mandatory recycling and reusing recycled content norms) in a phased manner. While the mandatory norms for collecting back the plastic packaging introduced in the market by manufacturers/importers and brand-owners in a phased manner kicked in from FY2022. The more stringent and cost-intensive norms for mandatory recycling and use of recycled content for packaging commences from FY2025 and FY2026, respectively. These norms will lead to the creation of a circular plastic economy and keep India ahead of peers in preventing plastic waste from becoming a menace.

### Plastic recycling and reuse to increase in the country under the new PWM rules

The new PWM rules aim to implement waste management in five categories of plastic packaging: Rigid, flexible, multi-layered plastic, plastic sheet/compostable plastics and biodegradable plastics (see Exhibit 1), covering both pre-consumer and post-consumer plastics (see Exhibit 2). These rules establish the responsibility of producers, importers as well as brand owners (PIBOs) (excluding MSMEs), among other obligated entities, (see Appendix A1) who use these types of plastic to recollect (EPR effective FY2022), recycle (effective FY2025) and use of recycled plastic in the new packaging products manufactured/used by them (effective FY2026), with the minimum thresholds for each becoming more stringent over the years (see Exhibits 3-4 and Appendix A1). In addition, these rules are also applicable to plastic waste processors, manufacturers and importers of plastic raw material and manufacturers of items made from compostable plastics or biodegradable plastics. It is interesting to note that India’s plastic recycling norms have taken cues from the EU plastic regulations (see Appendix A2) while adapting them to the indigenous needs of the country.

### PWM covers all types of plastic packaging commonly used in India

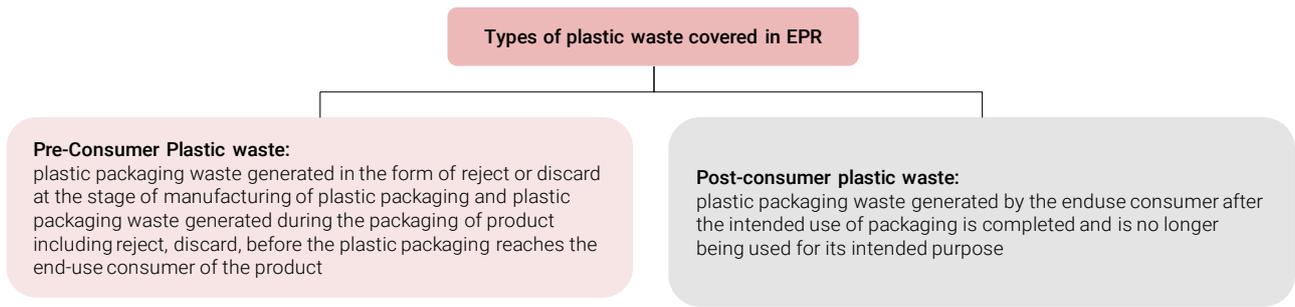
Exhibit 1: Categories of plastic covered under PWM

Category I	Category II	Category III	Category IV	Category V
Rigid plastic packaging	Flexible plastic packaging of a single layer or multilayer (more than one layer with different types of plastic), plastic sheets and covers made of plastic sheet, carry bags, plastic sachet or pouches	Multi-layered plastic packaging (at least one layer of plastic and at least one layer of material other than plastic)	Plastic sheets or like used for packaging as well as carry bags made of composite plastics	Plastic sheet or like used for packaging as well as carry bags and commodities made of biodegradable plastics

Source: MOEFCC, Kotak Institutional Equities

**PWM covers plastics used in both pre-consumer and post-consumer stages of plastic value chain**

**Exhibit 2: Broad types of plastic covered under PWM**



Source: MOEFCC, Kotak Institutional Equities

**PWM targets all three aspects of plastic value chain: Collection, recycling and use of recycled content**

**Exhibit 3: Key aspects of PWM guidelines implementation**

- PWM guidelines want the PIBOs to comply on three fronts: (i) Collection and bringing back of plastic; (ii) Minimum level of recycling and (iii) Use of recycled plastic content
- The amount of plastic packaging waste to be considered for determining the minimum quantities to be collected, recycled and reused is to be calculated category-wise for all the three groups as: Q1 quantity for Producers, Q2 quantity for Importers and Q3 quantity for Brand Owners.
- The amount of plastic to be recycled is to be computed as % of plastic collected back i.e., Q1, Q2 and Q3 depending on the category of the obligated entities
- The amount of recycled plastic to be used is to be computed as % of plastic produced (producer) or imported (Importer) or manufactured (brand owner)
- In the case of brand owners, they are required to reuse certain defined % of Category I rigid plastic packaging in products sold annually in addition to the targets on the other three fronts

Source: MOEFCC, Kotak Institutional Equities

**PWM rules mandate brand owners to recycle at least 50% of rigid plastics and 30% of flexible plastics and MLP from FY2025**

**Exhibit 4: PWM targets for brand owners, March fiscal year-ends, FY2022 and onward**

Plastic recycling rules for brand owners				
(i) EPR (% of Q3- category wise)				
	FY2022	FY2023	FY2024	
	25%	70%	100%	
(ii) Minimum obligation to reuse for Category I rigid plastic packaging (% of Category I rigid plastic packaging in products sold annually)				
	FY2026	FY2027	FY2028	FY2029 and onwards
(A) Category I rigid plastic packaging with volume or weight >= 0.9 liter or kg but < 4.9 liters or kg	10%	15%	20%	25%
(B) Category I rigid plastic packaging with volume or weight >= 4.9 liters or kg	70%	75%	80%	85%
(iii) Min level of recycling (% of EPR target)				
	FY2025	FY2026	FY2027	FY2028 and onwards
Category I	50%	60%	70%	80%
Category II	30%	40%	50%	60%
Category III	30%	40%	50%	60%
Category IV	50%	60%	70%	80%
(iv) Use of recycled plastic content (% of manufactured plastic for the year)				
	FY2026	FY2027	FY2028	FY2029 and onwards
Category I	30%	40%	50%	60%
Category II	10%	10%	20%	20%
Category III	5%	5%	10%	10%

**Notes:**

(a) Q3 is the Eligible Quantity in MT which shall be the average weight of virgin plastic packaging material (category-wise) purchased and introduced in market in the last two financial years (A) plus average quantity of (B) of pre-consumer plastic packaging in the last two financial years as under: - Q3 (in MT) = A + B

Source: MOEFCC, Kotak Institutional Equities

**India’s plastic waste management regulations have evolved over a period of time**

India’s focus on plastic waste management has evolved in the past two decades. It started with MOEFCC notifying the first-ever law on plastics in the form of The Plastics Manufacture, Sale and Usage Rules in 1999 to control the plastic litter primarily created from plastic bags by mandating its minimum thickness which continued to increase over time (see Exhibit 5). These precursory regulations culminated into introducing the concept of EPR and also proposed a two-year phase-out of multi-layered plastics (MLP) in 2016. However, after industry consultation, the MLP ban was repealed in 2018.

The regulations, however, continued to gather strength when Indian Prime Minister Narendra Modi announced on the World Environment Day in 2018 (and reiterated on August 15, 2019) that India will ban the use of Single Use Plastics (SUP) (see Appendix A3 for explainer on SUP) by 2022. The government announced Waste Management Amendment Rules, 2021, which announced a ban on the use of 19 SUP materials from July 1, 2022 (See Appendix A4). This further paved way for the current set of plastic waste management regulations that are more focused on collecting, recycling and the reuse of waste generated from plastic packaging.

## India's regulatory efforts for plastic waste management took off prominently after 2011 with the notification of PWM rules

### Exhibit 5: Regulatory milestones in India's plastic waste management journey

Timelines	Event
1999	The Plastic Manufacture, Sale and Usage Rules, 1999 were first introduced under the Environment (Protection) Act, 1986 which pronounced that the minimum thickness of plastic carry bags needed to be 20 microns
2011	The Plastic Waste Management (PWM) Rules, 2011 replaced the rules specified in 1999. The minimum threshold for plastic bags was increased from 20 microns to 40 microns while empowering the municipal authorities to enforce the regulatory provisions
2016	The minimum threshold for plastic bags was increased from 40 microns to 50 microns and the rural areas were also brought under the scope of the rules. The concept of EPR was introduced. Mandated that the manufacture and use of non-recyclable multilayered plastic should be phased out in two years time.
2018	The 2016 rules were amended to clarify that which Multi-Layered Plastic (MLP) which are non-recyclable or non-energy recoverable or with no alternate use are the ones to be phased out
Aug-2021	In line with the clarion call given by Hon'ble Prime Minister of India, Shri Narendra Modi, to phase out single use plastic items by 2022, Ministry of Environment, Forest and Climate Change, Government of India notified the Plastic Waste Management Amendment Rules, 2021, on 12 August 2021
2021	The 2016 rules were further amended to increase the minimum threshold for plastic bags from 50 microns to 75 microns w.e.f. 30th Sep, 2021 and 120 microns w.e.f. 31st December 2022. India banned manufacture, import, stocking, distribution, sale and use of identified single use plastic items, which have low utility and high littering potential, all across the country from July 1, 2022
Feb-2022	MOEFCC notified the Guidelines on Extended Producer Responsibility (EPR) on plastic packaging as Plastic Waste Management Amendment Rules, 2022
2023	Certain amendments to the 2016 rules were notified which were mainly procedural in nature. The amendment allowed for cross category offsetting of EPR certificates till FY2026, based on the availability and cost of collection, segregation and processing for different categories of plastic packaging waste
2024	Certain amendments to the 2016 rules were notified which brought additional category of plastic and obligated entities under its ambit. It also introduced further regulations on trading and value of EPR certificates

Source: Kotak Institutional Equities

### Managing plastic waste remains crucial; alternatives uneconomical and/or environmentally intensive

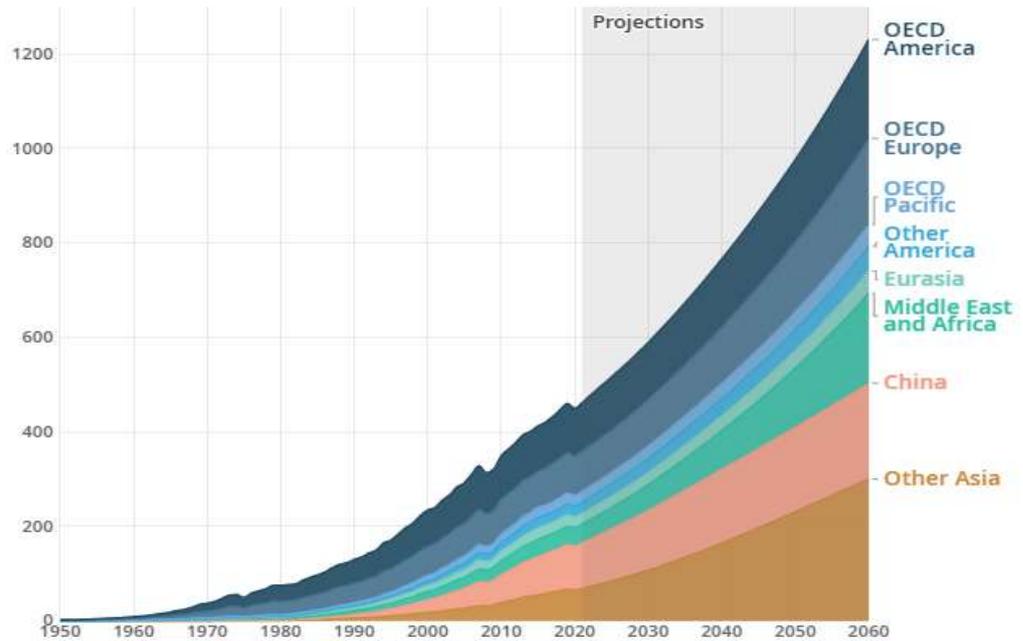
Plastic, a polymer bearing exclusive qualities of being light yet strong, agile and economical, has become ubiquitous and omnipresent in our lives. However, what is hailed as a 'wonder material' is also gradually turning into a grave environmental and health concern worldwide. The accumulation of plastic waste in the environment is a consequence of its non-biodegradable nature, which has made its end-of-life disposal difficult. The alternatives of plastics are expensive and/or environmentally intensive to cater to a large number of applications. Governments across the globe are laying regulations to reduce the intensity of plastic usage and are rolling out various policies to increase its recyclability, which offers a viable solution to manage the growing menace of plastic waste generation.

### Explosive growth in plastic usage is metamorphosing into a global menace

Over the last two decades, global plastic production has nearly doubled—from 234 mn tons (Mt) in 2000 to 460 Mt in 2019. The improper handling of plastic has led to a significant increase in global plastic waste generation, which has more than doubled from 156 Mt in 2000 to 353 Mt in 2019. In a BAU scenario, the OECD expects the plastic use to triple (from its 2019 levels) to 1231 Mt by 2060 (see Exhibit 6) on the back of rising population and income levels, leading to a significant increase in waste generation that needs to be handled well to avoid the huge environmental impact.

**Plastic production and use will continue to witness significant growth over the years**

**Exhibit 6:** Global plastic use under BAU case, calendar year-ends 1950-2060E, (mn tons)



Source: OECD, Kotak Institutional Equities estimates

**Alternatives are either uneconomical or come with higher environmental footprint**

Alternatives to plastics (such as paper, glass, metals, etc.) that have evolved so far come with their own set of economic and environmental challenges. While glass has relatively higher carbon footprint and is more expensive than plastic, the use of paper also entails certain limitations on durability, water-resistance, mouldability, etc. In addition to its high environmental footprint and costs, metal-based packaging, another alternative, is not only capable of replacing plastic packaging in all use cases but also drive up the weight and cost of packaging. Furthermore, glass and metals also have higher littering potential due to their non-biodegradability. Moreover, biodegradable plastics, biodegradable bioplastics and compostable plastics can also be potential alternatives to conventional plastics (see Appendix A5). However, the technology for the same is yet to evolve to become a cost-friendly viable solution.

**Plastic waste management rules strengthening across the globe**

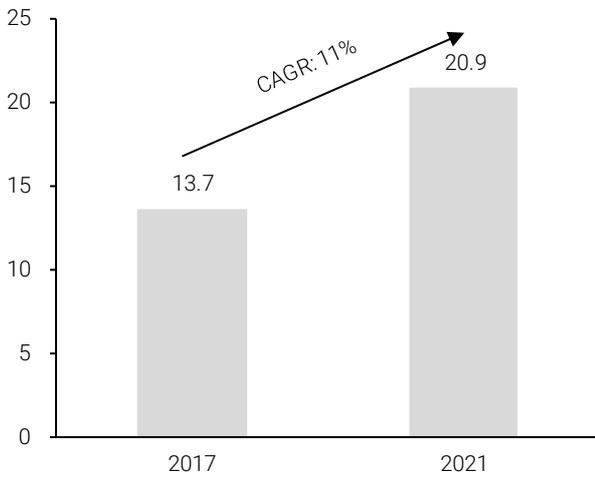
Globally, 175 countries have agreed to develop a legally binding agreement on plastic pollution by 2024 at the UN Environment Assembly Meeting held in March 2022. Countries across the globe are strengthening their policies on plastic waste management. A study done by the OECD shows that more than 120 countries have imposed bans and taxes on single-use plastics. Further, among the 50 large OECD emerging and developed countries, 13 countries have implemented national policy instruments in place that provide incentives to sort plastic waste at source and 25 countries have implemented instruments that encourage recycling.

**India remains ahead of the curve in recycling plastic waste**

Plastic waste generation in India over FY2017-21 saw a CAGR of 27% to 4.1Mt, outpacing the growth seen in plastic consumption (11% CAGR) (see Exhibits 7 and 8), primarily on account of increased use of single use plastics and unviable economics to collect/recycle plastic. This demonstrates an urgent need to migrate to a more stringent plastic waste management regime. The reported data on Indian plastic waste generation/ recycling differs across agencies, primarily due to the ambiguity arising from the presence of a large unorganized sector in the space as well as the difference in the methodology used by various agencies to arrive at it. India, with its long history of waste recycling done in the unorganized sector, is doing better than other nations in recycling plastic waste. As per OECD, India, with ~12% plastic recycling rates, fares better than most of its global peers, which, on average, recycle plastic in range of mid-to-high single digits (2019: 9%; source: OECD; see Exhibit 9). As per the Central Pollution Control Board (CPCB), plastic recycled by 15 states (out of the total 28 states and 7 UTs that reported total plastic waste generated), on average, stood at ~28% in FY2021. We believe that rigid plastics in the form of PET and HDPE (with RIC codes one and two; see Appendix A3) is currently recycled more in India, while the biggest challenge pertains to the non-recyclability of flexible and MLP due to unfavorable economic and technological challenges.

**Plastic consumption in India has grown at a significant pace**

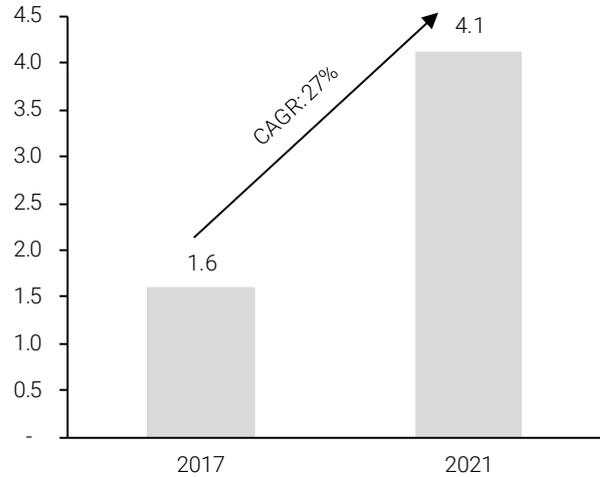
**Exhibit 7:** Plastic consumption in India, March fiscal year ends, 2017-21 (mn tons)



Source: Marico Innovation Foundation report, Kotak Institutional Equities

**Plastic waste generation more than doubled during 2017-21**

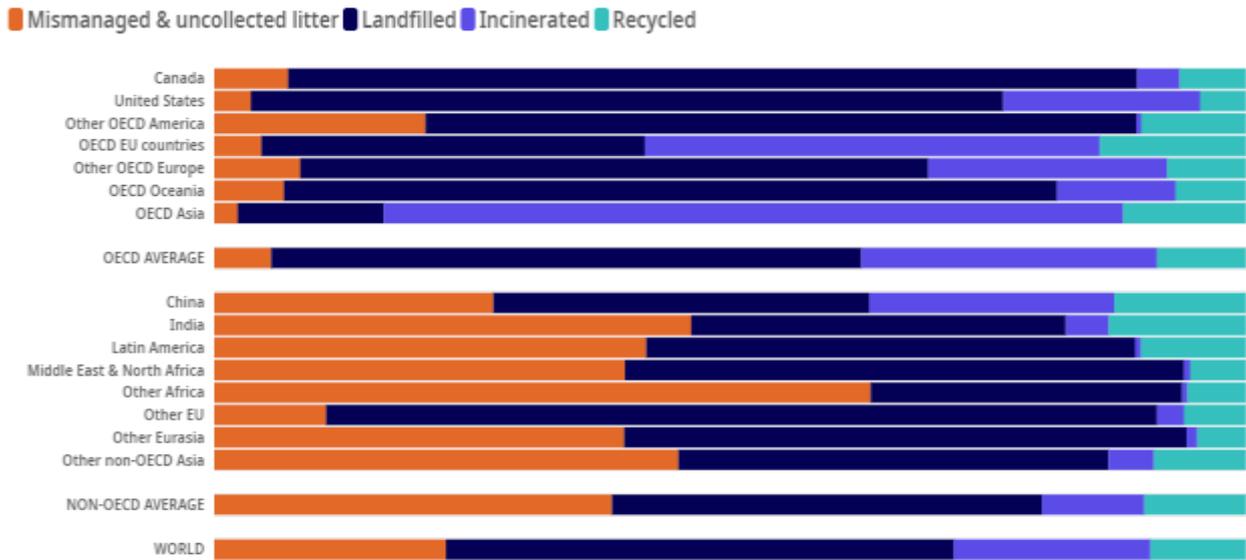
**Exhibit 8:** Plastic waste generation in India, March fiscal year ends, 2017-21 (mn tons)



Source: Marico Innovation Foundation report, Kotak Institutional Equities

**India is relatively ahead of peers in recycling plastic waste**

**Exhibit 9: Share of plastics treated by waste management category after disposal of recycling residues and collected litter, 2019 (%)**



Source: OECD, Kotak Institutional Equities

**Consumer companies vulnerable to roll-out of new rules; recyclers and packaging companies to gain**

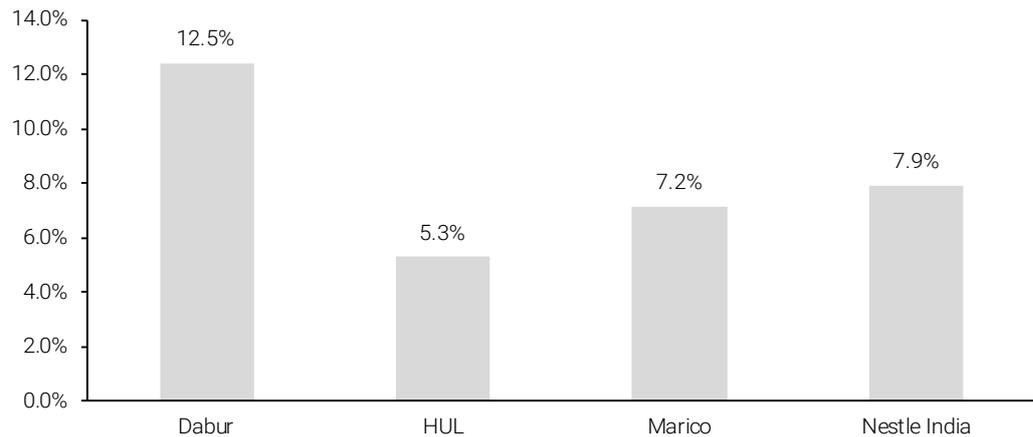
Consumer staple companies are one of the largest users of the plastic packaging and will be one of the most impacted sectors with the implementation of these regulations. The plastic packaging costs of the companies are expected to rise as companies implement their strategies to comply with the new PWM rules, which could adversely impact their margins to the extent they are not passed on to the customers. We believe that the regulations will have a higher impact for the food and oral care segment and products that require the use of transparent packaging. This is primarily due to the higher quality (virgin equivalent) of recycled plastic packaging material required to meet the product (safety or appearance) requirements and also due to the fact that it trades at ~40-50% premium to virgin plastic. Further, in our view, the lower-price point SKUs will be impacted more than the premium-priced SKUs as the latter have a higher exposure to flexible plastics/MLP (which are difficult and cost-intensive to recycle) and target customers who are less willing to pay the green premium. On the other hand, plastic recyclers such as Ganesha Ecosphere and innovative packaging companies such as EPL, Uflex and ITC, which can provide solutions for making plastic recyclable, develop products using PCR and offer economical alternatives to plastics, will be the key beneficiaries of the roll-out of the new PWM rules.

**Consumer companies remain highly reliant on plastic packaging - costs remain relevant**

We estimate that the packaging costs of companies in the KIE consumer staples universe are in the range of 5-13% of their revenues, with a high exposure to plastic given its unique value proposition. In the absence of specific regulations, only a few companies make an express disclosure of their packaging costs. In the KIE consumer staples universe, Dabur reported the highest packaging cost at 12.5% of its revenues (standalone numbers) in FY2023 (see Exhibit 10). We believe that the higher packaging cost of Dabur is attributable to the higher mix of more expensive alternative packaging products required for its diverse portfolio (such as glass bottles for honey, tetra packs for juices, etc.).

### Dabur reported the highest packaging cost among its peers under coverage

**Exhibit 10:** Packaging cost reported by companies as % of revenues, March fiscal year end, 2023 (%)



**Notes:**

(a) Data shown above Nestle India pertains to CY2022.

(b) VBL had reported average packaging cost of ~4% of revenues until CY2018. Since we don't have the latest data available, we haven't included the same here

Source: Companies, Kotak Institutional Equities

### New PWM rules to elevate packaging costs

We believe that the packaging costs for consumer companies will increase after the implementation of the mandatory norms of recycling and reuse of plastic waste due to the limited availability of high-quality plastic waste (leading to high recycling cost) and high-quality recycled plastic (leading to higher cost of use). The recycling costs are expected to rise as firms address the multiple challenges at all levels in the value chain, ranging from collection, sorting, traceability to technology. This is discussed in detail below.

- ▶ **Collection:** While India has made significant progress in the collection and recycling of rigid plastics, it lacks adequate formal infrastructure for collecting other types of plastic waste. The problem is bigger in the case of flexible plastics/MLP that are not collected by the waste pickers due to a lack of incentives and low weight.
- ▶ **Sorting and classification:** The sorting of waste in India is cumbersome and labor-intensive, owing to a lack of (1) proper segregation of waste at households and (2) large-scale automatic sorting technologies such as Near Infrared (NIR) Spectroscopy and X-ray-based sorting. The problem becomes even bigger in the case of flexible plastics that are relatively difficult to sort, and, hence, mainly yield hard-to-recycle-and-reuse mixed plastic waste.
- ▶ **Traceability and identification:** The traceability and identification of the source of plastic is difficult in the absence of any standardized indicators or marks. It becomes important to trace the source of plastic to avoid any contravention of laws and restrictions pertaining to use of recycled plastic for food grade packaging.
- ▶ **Recycling infrastructure and technology:** The recycling of MLP will primarily require the use of chemical recycling (refer to Appendix A6 for details on the different type of recycling technologies), which currently remains unviable due to high operating costs and high capex requirements. The cost of chemically recycled plastic is estimated to be at least two to three times more expensive than virgin equivalent plastic.

**Recycling flexible plastics and MLP is an uphill task; replacing with alternatives also escalates costs**

We believe flexible plastics and MLP will be the most difficult to recycle and reuse among the four types of plastics specified in the new PWM rules. The major challenge associated with recycling them pertains to their ease of collectability. Moreover, MLP is virtually non-recyclable due to its complicated structure comprising of multiple layers of plastic and non-plastic components. In our view, after the implementation of the new PWM rules (pertaining to mandatory recycling/reuse), companies, using flexible plastic and MLP in their portfolio, will have to bear higher costs for: (1) collection and segregation; (2) replacing MLP with other forms of recyclable packaging; and (3) implementing advanced recycling technologies to recycle MLP to the extent it isn't eliminated from the packaging.

**Use of recycled plastics most challenging in F&B sector and products requiring transparent packaging**

We expect the use of recycled plastic content for packaging will be most challenging for (1) the food & oral care segment, followed by personal care and least for the home care and (2) products requiring transparent packaging. This is primarily on account of the low availability and higher cost of virgin-equivalent recycled plastic packaging material required to meet the product safety/transparency requirements. Further, we note that the restrictions on using recycled plastics in food-grade packaging still exist in India, pending for revocation/modifications by the Bureau of Indian Standards (BIS)/ Food Safety and Standards Authority of India (FSSAI) (except in the case of recycled PET subject to certain conditions). The cost of virgin-equivalent recycled plastic packaging material might further increase once the use of recycled plastic begins in food-grade packaging upon revocation of the restriction.

**Premium SKUs to absorb green premium of recycled plastics more easily than low-price point SKUs**

We believe that lower-price-point SKUs (see Exhibit 11) will be more impacted by the new PWM norms than the premium SKUs. This is primarily due to: (1) the higher exposure to flexible plastics/MLP, which will relatively witness a higher increase in packaging costs than rigid packaging used for premium/higher price point SKUs and (2) the higher price sensitivity of the target customers of low-price-point SKUs (such customers will be less willing to pay the green premium). This will imply that margins in the lower-price-point SKUs (which already have lower margins than the higher-price-point SKUs) will squeeze further.

**Low-price-point SKUs will find it challenging to pass on the higher costs of recycled plastic packaging**

**Exhibit 11: General categories of low price point consumer products using plastic packaging**

Food and Beverages	Personal care	Home care
Milk pouches, biscuits (barring premium ones), chocolates and confectionary, bread, instant noodles, cakes, cookies, ice cream lollies, salty snacks (barring premium ones)	Shampoo sachets, hair oil sachets, toothpaste, toothbrush	Dish wash-bar, toilet cleaner, Laundry powder pouches

Source: Kotak Institutional Equities

# 2

## Britannia, Colgate and Nestle—the most impacted by the new norms

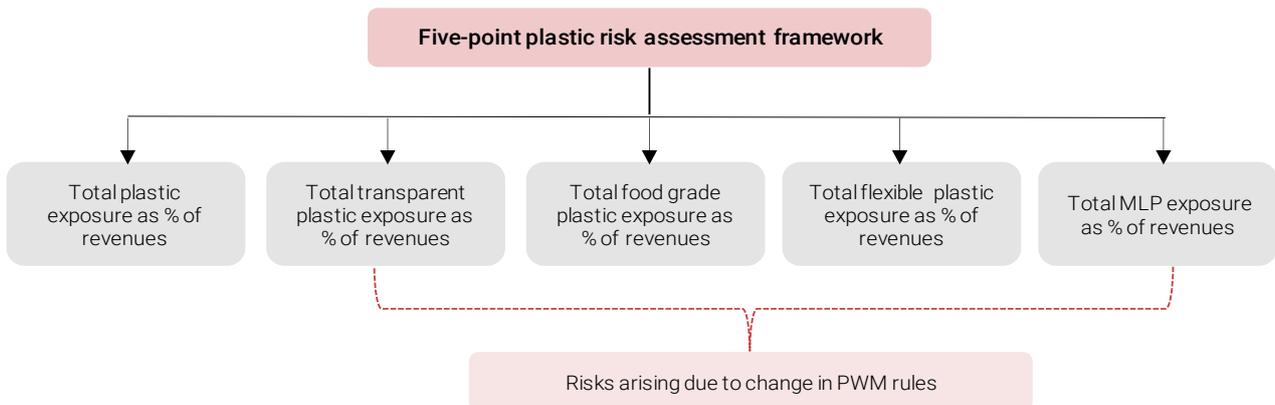
We believe that, in terms of incremental packaging costs, Britannia, Colgate Palmolive (Colgate) and Nestle will be the most impacted from the roll-out of the new PWM rules in our coverage universe. We expect Godrej Consumer (GCPL), ITC, Jyothy Labs and Varun Beverages (VBL) to be the least impacted companies. Our assessment is based on relative overall revenue based-exposure to five key points: plastic, transparent plastic, food-grade plastic, flexible plastic and MLP. Britannia, Colgate and Nestle have relatively higher exposure to hard-to-recycle flexible (including MLP) packaging and requirement for high-quality food-grade plastics.

### KIE’s 5-point framework for assessing exposure risk from new PWM rules

Our 5-point framework (see Exhibit 12) is based on the current exposure of companies to plastic used in primary packaging of their products and challenges being faced/expected to be faced by the companies in implementing the new plastic waste management rules. Most companies under our coverage universe do not give details of packaging material used by them. We have used our estimates for revenue of products that have exposure to plastic/type of plastic as a proxy to estimate the exposure to the category. Our assessment is based on the latest annual report and/or sustainability reports filed by these companies. As discussed earlier, the companies that have an exposure to flexible packaging and MLP will face an escalation in the cost for collection and recycling, while companies with more exposure to plastic packaging used for the F&B segment and transparent packaging will be adversely impacted by the higher cost of virgin-equivalent recycled plastic packaging material that will be required to meet the product safety/transparency requirements. However, it is to be noted that the cost escalation will be limited for companies using more of recycled PET (rPET) (e.g.: VBL) in their packaging due to the nature of the polymer which is easily recyclable to a high-quality product.

### Our assessment framework is focused on current exposure of companies to plastic packaging and risks arising from new PWM rules

Exhibit 12: Our 5-point assessment framework to assess the level of risk to companies due to exposure to plastic and new PWM rules



Source: Kotak Institutional Equities

**Britannia, Colgate and Nestle most vulnerable to adverse impact of new PWM norms**

Britannia, Colgate and Nestle, in our view, are the most vulnerable to the potential increase in cost with the advent of the new PWM rules (see Exhibit 13). This is primarily due to their higher exposure to flexible/MLP and food-grade plastic packaging (see Exhibit 14). While these companies have formulated/are formulating their targets and strategies to tackle the same, we believe that it will lead to an increase in the packaging costs. Our evaluation is based on a 5-factor risk assessment framework as discussed above. We believe Colgate, being a market leader, is better placed to pass on at least a part of its increase in packaging costs to its end consumers.

**Britannia, Colgate and Nestle are the most vulnerable to the implementation of new PWM rules**

**Exhibit 13: Potential increase in relative packaging cost of companies with the advent of new PWM rules**



Notes:

- (a) The companies in their respective categories for revenue exposure: Low, Medium and High have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**Majority of the companies in our coverage have medium to high exposure to plastic packaging**

**Exhibit 14: Assessment summary of plastic packaging-related exposure for KIE consumer staples coverage**

Sr. No.	Factor	General exposure	High exposure	Low exposure
1	Plastic packaging	Majority of the companies have medium to high exposure	Britannia, Colgate, Dabur, Marico, Nestle and Varun beverages	ITC
2	Flexible packaging	The exposure in companies varies from nil to more than 90% of overall revenues	Britannia, Colgate and Nestle	Dabur, GCPL, ITC, Jyothy Labs, Marico and Varun beverages
3	MLP packaging	Most of the companies have low requirement for MLP packaging	Colgate	GCPL, ITC, Jyothy Labs, Marico and Varun beverages
4	Food-grade plastic packaging	The exposure in companies varies from nil to 100% of overall revenues	Britannia, Colgate, Nestle and Varun beverages	GCPL, HUL, ITC and Jyothy Labs
5	Transparent plastic packaging	Most of the companies have low requirement for transparent plastic packaging	Varun beverages	Britannia, Colgate, GCPL, HUL, ITC, Jyothy Labs, Marico and Nestle

Source: Kotak Institutional Equities estimates

**Total plastic packaging footprint:** Most companies have significant revenue exposure to plastic packaging (see Exhibit 15). Britannia, Colgate, Dabur, Marico, Nestle and VBL have the highest exposure to plastic packaging while, ITC with its diversified businesses and paper based packaging used cigarette has the least.

**Majority of the companies derive a significant proportion of their revenues from products that use plastic in their packaging**

**Exhibit 15:** Relative proportion of revenues from products using plastic in their packaging, March fiscal year end, 2023



**Notes:**

- (a) The companies in their respective categories for revenue exposure- Low, Medium and High- have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**Flexible plastic requirement:** We believe most of the companies have low- to medium requirement of flexible plastics for their product packaging. Britannia, Colgate and Nestle have the highest exposure relatively to flexible packaging due to the nature of their product portfolio (see Exhibit 16).

**Britannia, Colgate and Nestle use the maximum proportion of flexible plastic in their product packaging**

**Exhibit 16:** Relative proportion of revenues from products using flexible plastic in their packaging, March fiscal year end, 2023



**Notes:**

- (a) The companies in their respective categories for revenue exposure- Low, Medium and High- have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**MLP requirement:** The majority of the companies have reduced their exposure to MLP over time by shifting toward monolayer packaging or using layers of polyolefins that are recyclable (see Exhibit 17). Britannia has highlighted in its FY2023 annual report that 72% of its laminates used in packaging are recyclable. However, we believe that shifting toward monolayer packaging or layers of polyolefins requires an increase in the thickness of packaging, which leads to higher costs. Colgate has the highest exposure to MLP, owing to the nature of its product portfolio as toothpaste is mainly packed in non-recyclable laminate tubes. While, Britannia, Dabur, HUL and Nestle have relatively medium exposure to MLP packaging.

**Most of the companies have low exposure to MLP in their product packaging**

Exhibit 17: Proportion of revenues from products using MLP in their packaging, March fiscal year end, 2023 (%)



Notes:

- (a) The companies in their respective categories for revenue exposure- Low, Medium and High- have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**Food-grade plastic packaging requirement:** The companies in our coverage use food-grade plastic in varying proportions. Companies such as Britannia, Colgate, Nestle and VBL use a relatively higher proportion of food-grade plastic (see Exhibit 18). We believe that these companies will face numerous impediments in using recycled food-grade plastic pertaining to the availability of food-grade recycled plastic and high prices. Moreover, the restrictions on using recycled plastic in food grade packaging still persist in India, pending for revocation by the BIS/FSSAI. However, FSSAI has notified the guidelines on using recycled PET (rPET) for F&B packaging along with other necessary specifications on methods of recycling, labelling requirements etc., thereby allowing companies to begin using rPET in food-grade packaging. We believe such guidelines for the remaining categories of plastic will be issued in due course of time.

**Britannia, Colgate, Nestle and VBL will require the highest proportion of recycled food-grade plastic packaging**

**Exhibit 18:** Relative proportion of revenues from products using food-grade plastic in their packaging, March fiscal year end, 2023



**Notes:**

- (a) The companies in their respective categories for revenue exposure- Low, Medium and High- have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**Transparent plastic packaging requirement:** VBL uses the most transparent plastic in its packaging among the consumer companies in our coverage, while Dabur has medium usage of transparent packaging (see Exhibit 19). We believe that the rest of the companies have a limited exposure to transparent plastic packaging with revenues from such products forming less than 15% of total revenues in FY2023. Companies using more transparent plastic will witness some margin dilution, owing to the high cost of transparent recycled plastic. The cost of transparent plastic across a few key varieties of the polymer is 1.1X to 1.8X times the cost of pigmented plastics (see Exhibits 20-23).

**Majority of the companies have low requirement of transparent plastic for their product packaging**

**Exhibit 19:** Relative proportion of revenues from products using transparent plastic in their packaging, March fiscal year end, 2023



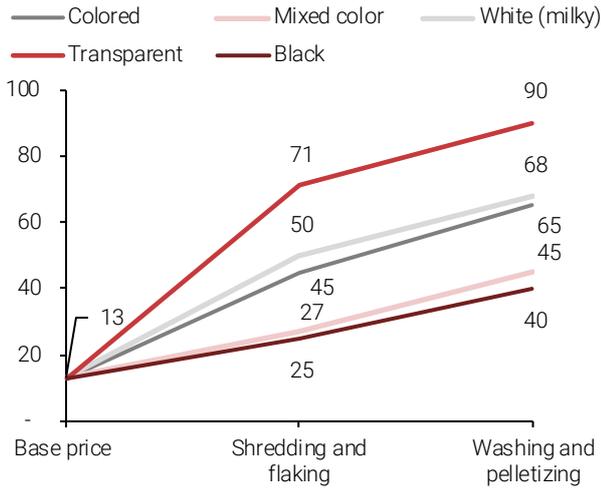
**Notes:**

- (a) The companies in their respective categories for revenue exposure- Low, Medium and High- have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**Price of transparent PP is 1.4X higher than colored PP**

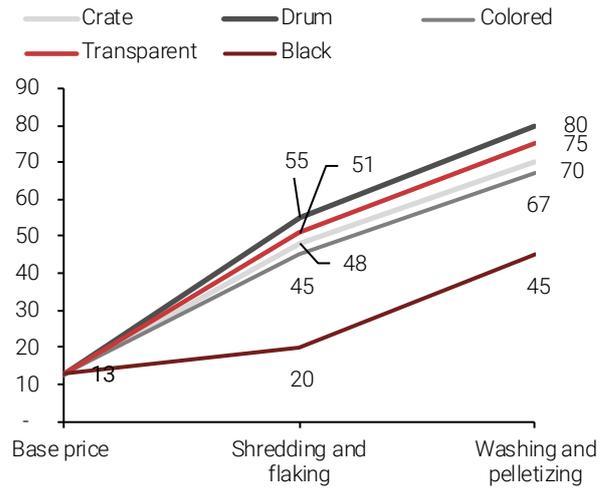
**Exhibit 20: Illustrative increase in polypropylene (PP) prices with unit operations (Rs/kg)**



Source: CSE, Kotak Institutional Equities

**Price of transparent HDPE is 1.1X higher than colored PP**

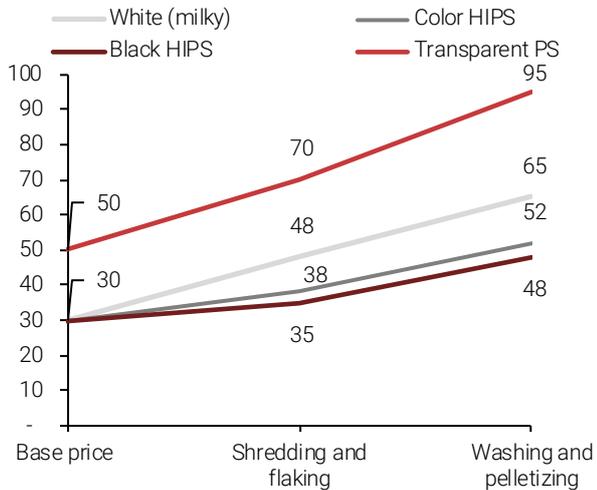
**Exhibit 21: Illustrative increase in HDPE prices with unit operations (Rs/kg)**



Source: CSE, Kotak Institutional Equities

**Price of transparent PS is 1.8X higher than colored HIPS**

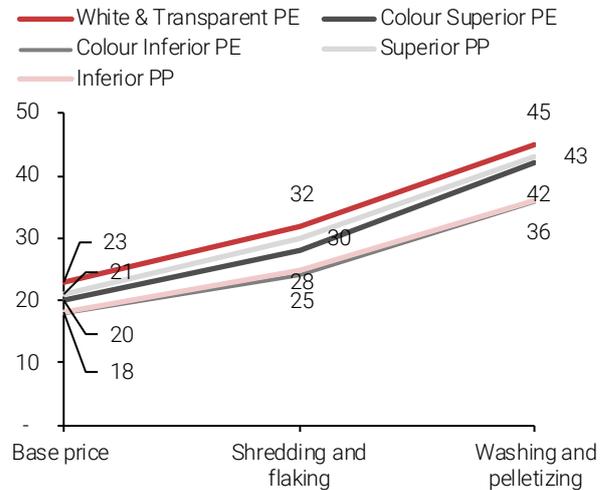
**Exhibit 22: Illustrative increase in polystyrene (PS) prices with unit operations (Rs/kg)**



Source: CSE, Kotak Institutional Equities

**Price of transparent carry bag is 1.1X higher than colored ones**

**Exhibit 23: Illustrative increase in carry bag prices with unit operations (Rs/kg)**



Source: CSE, Kotak Institutional Equities

## 3

## Cost optimization by reducing plastic intensity behind; costs set to rise

In the KIE consumer staple universe, so far GCPL, VBL and Marico have remained at the forefront in making efforts to align with the new PWM rules using the 3R (Reduce, Recycle and Reuse) approach. Colgate, Dabur, Jyothy Labs and Nestle India have not reported a significant progress on a relative basis. We note that the efforts required by companies to comply with the new norms will vary based on the category of plastic packaging required for their products. Companies so far have optimized most of their packaging costs by reducing the intensity of plastic, while little progress has been made by companies in recycling and using the recycled content for packaging, which will increase costs. We highlight that Dabur, ITC, Marico and VBL have made noticeable progress in the recycling of plastic waste while, some progress has been made by HUL and GCPL in using of recycled content for packaging. We expect MNCs such as HUL, Nestle and Colgate to be better-placed in keeping the cost increase under check, by deriving benefits from their global R&D platform. Dabur, GCPL, Marico and VBL have already announced their targets to comply with the new PWM rules, while others are also expected to align in the due course.

### Large packaging users collaborating to create a circular economy

Large Indian FMCG and e-commerce companies such as Marico, GCPL, HUL, ITC, Pepsico India, Swiggy and Zomato (list is not inclusive) have formed an alliance called India Plastics Pact (IPP) to create a circular economy for plastic packaging in India. IPP, launched in September 2021, is an initiative developed by the Confederation of Indian Industry (CII) and WWF India. The pact focuses on addressing the barriers to circularity in the plastic packaging sector through four ambitious time-bound targets (see Exhibit 24). IPP is the first such pact in Asia and joins a global network of 13 Plastic Pacts.

### IPP aims to eliminate plastic waste problem in India to achieve circular economy

#### Exhibit 24: 2030 targets set under India Plastics Pact

Define a list of unnecessary or problematic plastic packaging and items and take measures to address them through redesign and innovation

100% of packaging to be reusable, recyclable or compostable

50% of plastic packaging to be effectively recycled

25% average recycled content across all plastic packaging

Source: IPP, Kotak Institutional Equities

### 3R approach to migrate to the new plastic waste management rules

Consumer staple companies in our coverage universe have adopted various strategies centered around the 3R approach [(1) Reduce, (2) Recycle and (3) Reuse] to align with the new PWM rules. Our assessment is based on the latest annual report and/or sustainability reports filed by these companies. While the majority of the companies are doing well on reducing plastics, which also helps in optimizing their packaging costs, the progress on actively recycling and reusing plastic is very gradual, which, in our view, will lead to higher costs. Dabur, ITC, Marico and VBL have so far made noticeable progress in the recycling of plastic waste, while GCPL and HUL have done well in the use of recycled content in packaging (see Appendix A7 for further details on company-specific initiatives taken in this regard).

- **Reduce plastics:** Among the companies under KIE coverage, Britannia, GCPL, Nestle and VBL have highlighted a notable reduction in plastic intensity (see Exhibit 25) via a slew of measures (see Exhibit 26). We believe that the reduction in plastic used in packaging is the first step toward greater adoption of plastic recycling as well as rationalizing the cost of packaging. As per our conversation with large FMCG players, their R&D teams have been successful in bringing lot of optimizations in plastic content for various SKUs. The optimization has been relatively easier for home care and personal care products, while it has been limited for food products due to certain constraints pertaining to barrier properties required for keeping the quality of food intact.

- ▶ **Recycle plastic:** Companies in our coverage universe have focused on (1) making their packaging recyclable and (2) recycling the plastic waste generated. Britannia, Dabur, GCPL, HUL, ITC and Marico have made noticeable efforts so far in making their plastic packaging recyclable while Colgate, Dabur, ITC, Marico, Nestle and VBL have reported noteworthy progress in recycling plastic waste (see Exhibit 25). All of these companies are expected to engage with their PROs to undertake recycling going ahead, in line with their targets, which will result in higher costs. While these higher costs will have to be borne by all the players, we believe the impact for companies using a greater proportion of flexible plastics and MLP will be higher. Britannia, Colgate, HUL and Nestle are expected to witness a higher increase in recycling costs as their use of flexible food-grade plastics and MLP is relatively higher than other companies.
- ▶ **Reuse plastic:** HUL and GCPL are the few companies that have made material progress in using recycled plastic for packaging. We believe that the use of recycled plastic will be easier in the case of home care and personal care products, while its use for food packaging will have regulatory, technological and behavioral challenges.

**Majority of the companies under our coverage universe have reported progress in reducing plastic and using recyclable plastics**

**Exhibit 25: Quantifiable progress reported by companies on four key factors in plastic waste management**

Sr. No.	Name of company	Reduce	Recycle plastic waste	Making plastic packaging recyclable	Use of PCR in packaging
1	Britannia Industries	✔		✔	
2	Colgate <sup>b</sup>		✔		✔
3	Dabur India	✔	✔	✔	
4	GCPL	✔		✔	✔ <sup>c</sup>
5	HUL			✔	✔
6	ITC		✔	✔	✔
7	Jyothy labs	✔ <sup>d</sup>			
8	Marico <sup>e</sup>	✔	✔	✔	✔
9	Nestle India	✔	✔		
10	Varun beverages	✔	✔	NA <sup>f</sup>	

**Notes:**

- (a) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.
- (b) Colgate has specified that 98% of packaging (primary + secondary packaging including paper and plastic) for toothbrushes and 69% of its packaging (primary + secondary packaging including paper and plastic) for toothpaste is made up of recycled material. However, as the use of recycled plastic is currently restricted for food grade packaging, we believe the use of recycled material for packaging of toothpaste is limited to secondary packaging of the product. Hence, we have considered use of recycled plastic only for packaging of toothbrush for this exhibit.
- (c) GCPL used 3.5% PCR content in packaging in FY2022
- (d) Jyothy Labs has reported reduction in plastic intensity for its major product lines.
- (e) Marico reported 200 Mt reduction in plastic consumption in rigid packaging in FY2022. The company had reported that it had recycled 72% of total plastic waste collected under EPR. The company has reported a combined number of 18,584 tons of plastic waste collected, recycled and safely disposed in FY2023 with no further bifurcation.
- (f) Since VBL uses 100% PET in its packaging which is fully recyclable, the company hasn't set any targets or reported progress on making its packaging recyclable

Source: Companies, Kotak Institutional Equities estimates

**Various initiatives are being implemented by companies to reduce their plastic packaging footprint**

**Exhibit 26: Plastic packaging reduction initiatives being implemented by companies**

**Light-weighting** via: i) reduction in size; ii) reduction in thickness of packaging; iii) removing extra packaging like plastic trays from packaging of biscuits

**Making packaging reusable:** i) handwash/bodywash being sold in powder-to-liquid/ liquid concentrate/ dilute at home form which when diluted with water can be stored in reusable storage bottles); ii) toothpaste tablets sold in reusable containers

**Using alternative packaging materials:** i) making toothbrushes from recyclable materials like bamboo; ii) switching from plastic straws to paper/metal straws; iii) switching from plastic tea bags to biodegradable tea bags

**Using refillable packaging** by setting up refill stations for products

Source: Kotak Institutional Equities

- ▶ We note that the efforts required by companies to comply with the new norms will vary based on the category of plastic packaging required for their products. GCPL, Marico and VBL lead the pack in terms of efforts being undertaken to comply with the norms and progress reported on the targets set by them (see Exhibits 27-28 and Annexure A7), while Colgate, Dabur, Jyothy Labs and Nestle India have lagged. In terms of setting measurable targets, Dabur, GCPL, Marico and VBL have set the most stringent targets compliant with the PWM norms (see Exhibit 29). A closer look at these targets reveals that though all of them have done the first level compliance of achieving their EPR targets, most of them have not framed any targets for active recycling of plastics and the use of recycled content yet (see Exhibit 30). As far as the targets for recycling are concerned, targets have mainly been set in the form of making certain percentage of packaging recyclable but not actively recycling them. The targets and performance for plastic waste management by India-domiciled multi-national corporations also lags that of their global parents.

**Godrej, Marico and VBL have reported leading measurable progress on complying with PWM rules and their targets**

**Exhibit 27: Relative ranking of consumer staples companies under coverage based on the progress on their plastic waste recycling targets**



Notes:

- (a) The companies in their respective categories for revenue exposure- Getting prepared, Faring well and Leaders- have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**Dabur, GCPL, Marico and VBL have set stringent targets to comply with plastic waste management rules**

**Exhibit 28: Broad categorization of targets set by FMCG companies and progress reported until FY2023**

Category	Target	Progress till FY2023
<b>Reduce plastic in packaging</b>		
Britannia	Eliminate 20,00,000 kgs by the end of FY2023 cumulatively; working on plastic tray removal projects and aim to avoid usage of ~4,00,000 kgs of Plastic in the future	On annualized basis, ~4,75,000 kgs of the plastic trays have been successfully removed over the years on the back of R&D programs
Colgate	Reduce virgin plastic by one-third (from 2019 baseline)	No progress reported
GCPL	20% reduction in packaging intensity by FY2026 from FY2020 level	Till FY2023, reduced our plastic packaging intensity by 17% since the FY2020
Marico	Reduce packaging material intensity by 10% by 2030	200 Mt reduction in plastic consumption in rigid packaging reported till FY2022
<b>Recycle plastic waste/Making packaging recyclable</b>		
Britannia	Use 100% recyclable laminate packaging in its portfolio by the end of 2024	72% of its laminates used for packaging are recyclable
Colgate	100% recyclability of the plastic used in packaging across all categories by 2025	80% of company's packaging materials (including paper, plastic, metals etc.) was recyclable
Dabur	80% reusable, recyclable, or compostable packaging by 2028	In FY2023, 54% of its total plastic packaging was recyclable
GCPL	Collect and recycle 100% of pre and post-consumer plastic; 80% of plastic used to be recyclable by FY2026	No progress reported on recycling of plastic waste; Over 34% of its plastic is recyclable
HUL	100% reusable, recyclable or compostable plastic packaging by 2025	In CY2022, ~73 % plastic packaging used was recyclable
ITC	100% Reusable, Recyclable or Compostable/ Biodegradable Plastic Packaging by 2028	By FY2023, 99.9% of this has been achieved while phase out plans have been framed for the rest
Jyothy Labs	100% packaging material made of reusable materials by 2032	No progress reported
Marico	Transition to 100% recyclable packaging portfolio by 2025	Achieved 94.5% recyclable packaging through the 'Upcycle' programme
VBL	100% recycling of used PET bottles by 2025	86% of used PET bottles recycled till 2023
<b>Using PCR in packaging</b>		
Dabur	Use 30%, 10%, and 5% of recycled plastic packaging content in plastic packaging of nonfood grade items for Category I, Category II, and Category III plastics, respectively, by FY2026	No progress reported
GCPL	Rigid plastics to be replaced by 30% recycled plastic by FY2026. Flexible plastics to be replaced by 10% recycled plastic and multi-layer plastics to be replaced by 5% recycled plastic by FY2027	Using 3.5% PCR content in plastic packaging till FY2022
HUL	15% recycled plastic by 2025	2.9% recycled plastic used in FY2023
Marico	Increase the use of recycled content in packaging upto 30% by 2030 or as advised by regulation	Used 2.7% recycled LDPE and 3% recycled PET in its packaging in FY2023
VBL	30% rPET to be utilized in total PET packaging by 2025	No progress reported

**Notes:**

(a) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Companies, Kotak Institutional Equities

**Dabur, GCPL, Marico and VBL lead the pack in setting up targets in line with the requirements of the new PWM rules**

**Exhibit 29: Relative ranking of consumer staples companies under coverage based on the stringency and alignment of targets with PWM rules**



Notes:

- (a) The companies in their respective categories for revenue exposure- Getting prepared, Faring well and Leaders- have been arranged in alphabetical order and do not indicate any relative difference in our assessment of their risk exposure
- (b) Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.

Source: Kotak Institutional Equities estimates

**Dabur, GCPL, Marico and VBL have set the most relevant targets to align with PWM rules**

**Exhibit 30: Broad types of plastic recycling targets set by companies under coverage**

Sr. No.	Name of company	EPR (100% plastic waste collected back)	Reduce plastic in packaging	Recycling plastic waste	Making plastic packaging recyclable	Using PCR in packaging
1	Britannia Industries	✓	✓		✓	
2	Colgate	✓	✓		✓	
3	Dabur India	✓			✓	✓
4	GCPL	✓	✓	✓	✓	✓
5	HUL <sup>b</sup>	✓			✓	✓
6	ITC	✓			✓	
7	Jyothy Labs	✓			✓	
8	Marico	✓	✓		✓	✓
9	Nestle India <sup>c</sup>	✓				
10	VBL	✓		✓	NA <sup>d</sup>	✓

Notes:

- (a) We have considered only quantifiable targets specified by the companies. Our assessment is based on the latest annual report and/or sustainability reports filed by these companies.
- (b) HUL India, unlike its global parent, hasn't declared any quantitative commitment (intensity based/absolute) for reducing plastic used in its packaging. Hence, we haven't marked it as a Yes. For more details on targets set by the global parent, please refer to the respective company section in this note.
- (c) Nestle India hasn't specified any target, qualitative or quantitative, unlike its global parent. Hence, we haven't marked it as a Yes for the company. For more details on targets set by the global parent, please refer to the respective section in this note.
- (d) Since VBL uses 100% PET in its packaging which is fully recyclable, the company hasn't set any targets or reported progress on making its packaging recyclable
- (e) ITC claims to recycle 99% of the waste generated. The company hasn't set any target on this.

Source: Companies, Kotak Institutional Equities

# 4

## Recycling boost to have impact across multiple sectors

In our view, plastic recyclers such as Ganesha Ecosphere and innovative packaging companies such as EPL, Uflex and ITC that provide solution for making plastic recyclable, develop products using PCR and economical alternatives to plastics will be the key listed beneficiaries of the roll-out of new PWM rules. We expect the fragmented and unorganized plastic recycling industry to consolidate and witness the emergence of a few large players. Chemical recycling (currently uneconomical) is likely to emerge as the end-of-life solution to plastics in the long-run; Reliance and Uflex have been the early-entrant in the space and may lead the adoption in India. Alongside these, we expect that the progression of PWM rules will facilitate (1) decarbonization of cement sector by increasing availability of plastic waste to be used as alternate fuels and (2) reduction in costs for road construction.

### Emergence of large plastic recyclers in due course; Ganesha Ecosphere - a key listed beneficiary

The implementation of new PWM rules will create lucrative opportunities for plastic recycling companies. Currently, the plastic waste management and recycling space is highly fragmented and is largely unorganized. The roll-out of EPR guidelines have seen an emergence of PROs (see Exhibit 31). We expect that with regulatory tailwinds from new PWM rules some of these PROs could witness a significant increase in their scale of its operations. The Shakti Plastic Industries, one of the large PROs based in Mumbai, has announced a JV with LyondellBasell to build and operate a mechanical recycling plant in India with an annual capacity of 50MT. Ganesha Ecosphere, one of the largest PET recyclers in India, is undertaking significant expansion to capture the emerging opportunity. Our conversation with few of the large PROs in the country revealed the exciting foray being done by them to leverage the huge opportunity. At the same time, they also anticipate competition to increase with domestic and global polymer behemoths looking to undertake forward integration in their businesses in the medium term.

### Implementation of PWM rules in India will drive the demand for plastic waste recycling

Exhibit 31: List of listed and major unlisted plastic recyclers who will benefit from new PWM rules

Listed companies	Unlisted companies
Ganesha Ecosphere, RIL	Shakti Plastics, Dalmia Polypro, AP Chemi, Banyan Nation, Deluxe Recycling, GEM Enviro Management, JB Ecotex

Source: Kotak Institutional Equities

### Ganesha Ecosphere

- ▶ Ganesha Ecosphere utilizes pre- and post-consumer PET bottle scrap to produce rPET fiber, yarn and rPET chips (see Exhibit 32). Until 2023, the company was mainly engaged in secondary recycling with an annual capacity of 106,800 tons; it recycles 15% of India’s PET bottle waste.
- ▶ In FY2023, it also announced the entry into the primary recycling market via GoReWise. The company has deployed its SuperClean recycling technology to transform PET plastic waste into rPET flakes, rPET chips- bottle grade, rPET chips- Textile/Sheet grade, recycled polyester filament, fibers and yarns (see Exhibit 33).
- ▶ The company has enhanced its manufacturing capacity to 156,440 tons by 3QFY2024 and further announced capacity expansions of 42,000 tons to be commenced in the near term to capitalize on favorable government policies that continue to positively influence the recycled market. The company aims to double its revenues yoy in FY2025.
- ▶ It expects to be a key beneficiary of the increased demand for recycled PET, which is expected to be 2-2.5X of the current supply capacity in the next 5-7 years. In the next 4-5 years, the turnover of India’s PET recycling industry is expected to exceed US\$1.7 bn.

**PET bottles can be efficiently recycled to make polyester staple fiber**

**Exhibit 32: Recycled fiber manufacturing process flow chart**



Source: Ganesha Ecosphere, Kotak Institutional Equities

**Ganesha Ecosphere is moving toward circular economy via the launch of GoRewise division**

**Exhibit 33: Product offerings by Ganesha Ecosphere under GoRewise division**

Product	Description
rPET flakes	High-purity and de-contaminated rPET Flakes available in PSF, Filament, and Bottle grade variants; can be used by other businesses, but they are also instrumental in the production of the rest of the company's premium offerings
rPET chips - Bottle grade	Premium quality rPET chips that have a high filtration index and can replace virgin plastic for both food grade and non-food grade packaging. These come with USFDA and EFSA certifications and are available in various IV customizations for different end-use applications like water, carbonated soft drinks, edible oils, detergent bottles, oils etc. They can be traced back to their origin.
rPET chips- Textile/Sheet grade	rPET chips with high consistency to manufacture premium quality fabrics and sheets. These chips come with global certifications like GRS & OekoTex and are available with a variety of customizations.
Recycled Polyester filament, Fibers and Yarns	Recycled Polyester is available in the form of performance fibers, spun yarns, and filament yarns - all of which are durable, customizable, highly eco-friendly, and available in many denier/dtex ranges and colors

Source: Company, Kotak Institutional Equities

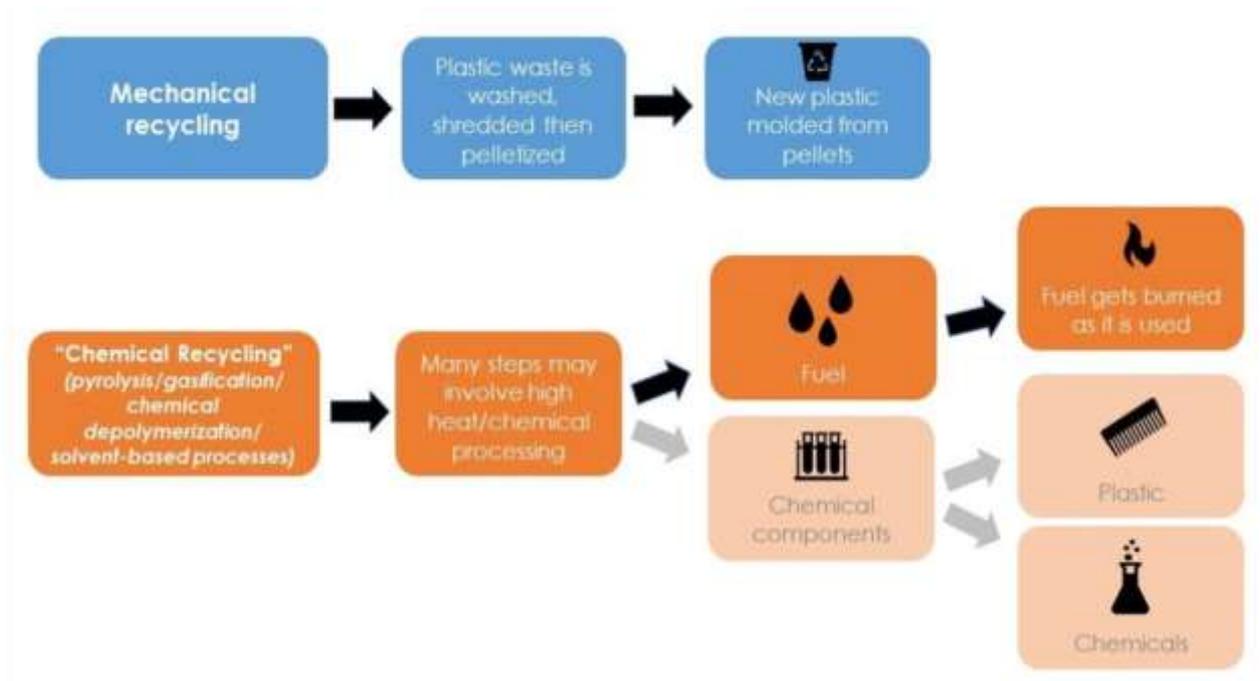
**Chemical recycling of plastic to pick up gradually; RIL expected to lead the adoption**

Mechanical recycling has been the preferred mode of recycling plastic waste in India until now (see Appendix A6 for an explainer on types of recycling). MLP is virtually non-recyclable and HDPE and PP can be also mechanically recycled limited number of times (HDPE- 7 to 8 times; PP- 2 to 3 times) before they start degrading. In such cases, chemical recycling could play an important role by enabling reconversion of plastic back into polymers or oil (see Exhibit 34). However, its adoption has remained very miniscule so far due to significant high upfront capital investment, warranting continuous supply of plastic waste for operational sustainability. The cost of chemically recycled plastic is estimated to be at least two to three times the cost of their virgin equivalent plastic. Further, these technologies have traditionally been associated with negative environmental impact. Nonetheless, with the passage of time, new pyrolysis technologies have been developed which have lower impact on environment, proven to be viable at a capacity as low as of 0.5-1 tons per day per plant (a volume that can be easily aggregated locally) and marketable output (e.g., oil).

Reliance Industries and Uflex are expected to lead the adoption of chemical recycling in India. Reliance has developed a chemical recycling technology that turns different types of plastic waste, including single-use and multi-layered plastics, into pyrolysis oil, which is later on turned into circular polymers. Its refinery in Jamnagar, Gujarat is now processing chemically recycled pyrolysis oil to produce ISCC-Plus certified circular polymers, CircuRepol (Polypropylene) and CircuRelene (Polyethylene). At its Noida Packaging plant, UFlex converts discarded plastic waste material that's generated every day from printing, unused trim, laminates, tubes and other unprocessed material into Liquid Fuel, Hydrocarbon Gas and Carbon Black which substitutes use of energy in machinery.

### Chemical recycling to supplement mechanical recycling in plastic waste management

Exhibit 34: Steps involved in mechanical and chemical recycling



Source: GreenBiz, Kotak Institutional Equities

### Innovative packaging companies set to gain

Indian packaging companies such as EPL, Uflex and ITC can gain by providing innovative packaging solutions that can help make the packaging recyclable, develop products that use recycled plastics and products which are economical alternatives for hard-to-recycle MLP. These companies can gain by generating higher margins and better market share.

#### Essel Propack (EPL)

- ▶ EPL aims to become the most sustainable packaging company in the world. It is a signatory to the new plastic global commitment, led by the Ellen McArthur Foundation and United Nations Environment Program, India Plastics Pact and the United Nation's Global Compact (UNGC).
- ▶ The company has adopted a 3R approach (Reduce, Recycle and Reuse) for its product portfolio development. This has culminated in its Platina category of sustainable tubes (see Exhibit 35).

**EPL launched Platina tubes in December 2020 and has witnessed demand growth**

**Exhibit 35: EPL’s sustainable Platina tubes portfolio**

Product	Description	Use cases
Platina	Barrier webs recyclable in Code 2 HDPE bottle stream	Oral care, toiletries and food items
Platina Pro	High barrier webs for higher flavour retention and recyclable in CODE 2 HDPE bottle stream	Products requiring higher flavour retention
Platina Pro Vision	High Barrier transparent webs for better product display / aesthetics and recyclable in CODE 2 HDPE bottle stream	Product requiring attractive product display without losing the benefit of code 2 recyclability
Platina Pro ME	High barrier metallic webs for foil look / better aesthetics and recyclable in CODE 2 HDPE bottle stream	Products requiring metallic or foil finish depending on brands selling them
Etain/Platina PCR	HDPE tubes with mechanically recycled PE content to the extent of 60%	Companies required to use recycled plastic in their product packaging

Source: Company, Kotak Institutional Equities

- ▶ The company has redesigned the structure of these tubes to make it suitable for recycling in code 2 HDPE stream and providing the option for reusing the recycled HDPE PCR resin into the same tube application in this category. They can be used for packaging of oral care products, toiletries and food items without compromising product quality as well as touch and feel of the packaging. These tubes constituted ~10% of its total sales in FY2023, up by 150% yoy. The company aims to double its volumes to form ~20% of its total sales in FY2024.
- ▶ In FY2023, it partnered with Colgate India and Himalaya to design and supply recyclable tubes for their products. During the year, Colgate successfully transitioned Colgate Active Salt and Colgate Vedshakti to 100% recyclable Platina laminated tubes. Himalaya and EPL jointly worked in redesigning its facewash range to improve packaging aesthetics, focusing on source reduction, yet keeping it 100% recyclable in code 4 polyethylene recycling stream.

**Uflex**

- ▶ Uflex’ global sustainability initiative ‘Project Plastic Fix’ is designed to form solutions that focuses on solutions to keep plastic in the economy but out of the environment.
- ▶ It aims to manage plastic waste stock and flow through its 4R approach to transform ‘Waste to Wealth’ – Reduce, Reuse, Recycle and Return (see Exhibit 36).
- ▶ The company currently has four key sustainable offerings under the aegis of this project: 1) 100% PCR PET films; 2) MLP recycling machine that turns mixed plastic waste into granulated product without the need for separation of layers; 3) pyrolysis technology for converting plastic waste into Liquid Fuel, Hydrocarbon Gas and Carbon Black that substitutes use of energy in machinery; and 4) enzyme-based technology that breaks down flexible packaging waste into water, biomass and carbon.
- ▶ The company is in the process of commissioning a Multi-Layered Plastic (MLP) recycling facility in Poland. The company has invested US\$7 mn in Poland, US\$20 mn in Mexico and US\$3 mn at a new site (Malanpur) in India in FY2023 for expansion.
- ▶ With brand owners continuously looking to reduce the environmental impact on account of non-recyclable packaging, Uflex launched a fully recyclable spout pouch using BOPP (Biaxially Oriented Polypropylene)/PE films for a leading brand. The company also developed a new type of film designed to replace foil in packaging.

**Uflex has adopted a 4R approach to transform plastic waste to wealth**

**Exhibit 36: Sustainable offerings by Uflex for plastic waste management**

Approaches	Product/Technology offerings
Reduce	Company offers post-consumer grade PCR Films having up to 100% post-consumer recycled PET content under the brand name Asclepius. This film’s technology is a family of plain, treated, coated, high barrier and heat-sealable BOPET films based on 100% PCR polymer content.
Reuse	Uflex created ReLAM 250, a high-end multi-layer recycling machine meeting European standards, which turns mixed plastic waste into granulated product without the need for separation of layers. The company also offers packaging films by upcycling MLP waste into PCR PE films.
Recycle	Uflex’ pyrolysis is a resource recovery process that converts MLP waste into forms of energy helping the environment clear the plastic waste. At its Noida packaging plant, Uflex converts discarded plastic waste material that’s generated every day from printing, unused trim, laminates, tubes and other unprocessed material into Liquid Fuel, Hydrocarbon Gas and Carbon Black which substitutes use of energy in machinery
Return	Uflex is conducting trials of Flexzyme, an enzyme based technology, with consumer brands. This technology breaks down uncollected flexible packaging waste completely into harmless components like water, biomass and carbon when it comes into contact with soil.

Source: Kotak Institutional Equities

**Cement sector witnesses increase in AFRs; road developers witness plastic blending in raw material**

The regulations also permit using plastic waste as a fuel in cement kilns or road construction as well as processing apart from recycled plastic waste being incorporated back into the product or chemically recycled as oil. The implementation of new PWM rules will also drive-up demand in these spaces as the recycling and reuse infrastructure scales up gradually over a period of time. While two of these applications in cement kilns and textiles are already well commercialized in India, use of plastic waste in road construction and chemically processing it to make oil/chemicals are still in the nascent stage. It is noteworthy that most of the large cement manufacturers are keen on increasing their alternative fuel and raw materials (AFR)/ thermal substitution rate (TSR), thereby indicating a promising outlook for use of plastic waste as fuel in cement kilns.

**Increase in the availability of plastic waste to aid higher adoption of AFR by cement companies**

We believe that plastic recycling norms will continue to boost the adoption of AFR by cement companies as co-processing of plastic waste in cement kilns is a recognized method to fulfil EPR. At the same time, cement companies are targeting to increase their AFRs as one of the key strategies to pursue their decarbonization plans with carbon pricing in India already approved by both the houses of the parliament, the roll-out of which is expected soon. The cement sector, which accounts for ~7% of global GHG emissions, is usually among the early sectors to be mandated for carbon pricing. The increase in the AFR will help companies reduce their carbon footprint and moderate the impact of carbon pricing once implemented. Increasing AFR by 1% leads to 2-3 kg of carbon reduction per ton of cement produced.

The average AFR for large Indian cement manufacturers was in the range of 4-17% in FY2023 (see Exhibit 37). We expect to see a gradual improvement in AFR with Dalmia and ACC, taking an early lead among the large cement manufacturers. The co-processing of plastic waste in cement kilns is a beneficial exercise for utilizing non-recyclable and single-use plastic waste, against which PROs can receive an EPR certificate for PIBOs.

**AFR rates have been rising for the cement sector**

**Exhibit 37: Alternative fuel rate, March fiscal year-ends, 2017-23 (%)**

	2017	2018	2019	2020	2021	2022	2023
ACC	3.2	4.0	4.5	5.5	6.9	7.3	9.0
Ambuja	5.1	4.2	5.6	5.4	4.2	5.1	6.0
Dalmia	DNA	3.2	3.7	5.5	7.6	13.0	17.0
Shree	1.2	2.9	1.2	1.2	6.0	2.4	4.0
UltraTech	2.3	3.6	3.9	3.7	3.1	4.6	5.0

Notes:

(a) ACC and Ambuja follow calendar year for reporting until 2022; hence for them FY2022 represents CY2021 and similarly for earlier years. They have shifted to March ended fiscal year reporting from 2023 onwards.

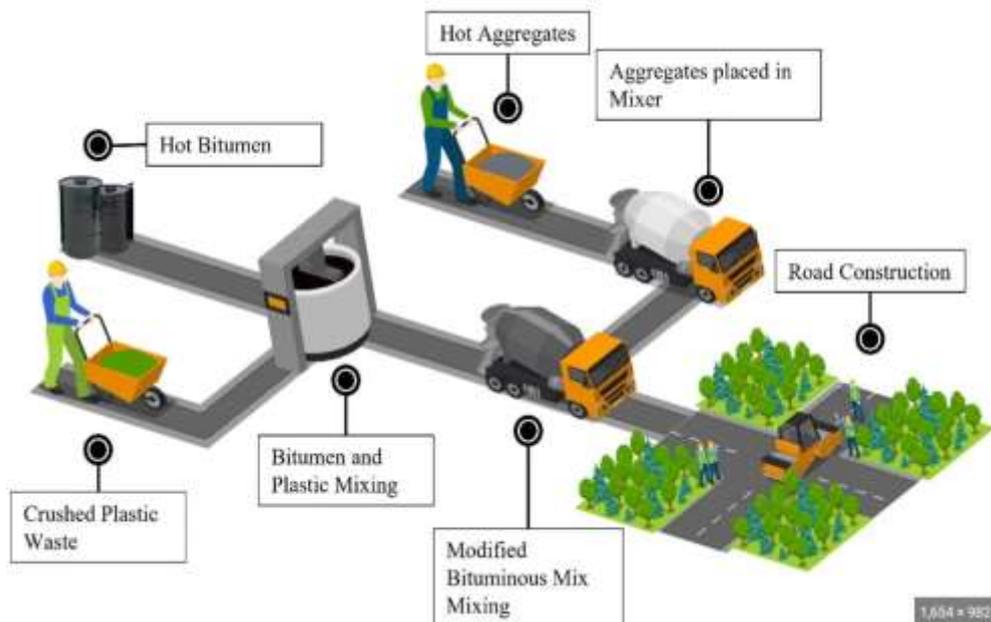
Source: Companies, Kotak Institutional Equities

**Use of plastic waste for making roads to reduce construction costs**

India had created one more arena for deploying its growing plastic waste by notifying the regulations mandating use of specified plastic waste in road construction in 2015. However, the pace of its pickup has remained slow and mainly driven by the change in regulation. The limited pickup could be attributable to limited supply of specified plastic waste and a lack of more stringent regulations. We expect to witness an increased adoption of this technology as: 1) the availability of specified plastic waste increases with the establishment of proper waste collection and segregation mechanisms and 2) regulations become more stringent requiring higher proportion of plastic waste to be used. As per the current regulation, the combination of plastic waste with hot mixes is to be used for making bitumen roads surrounding the metro areas (see Exhibit 38). The Ministry of Road Transport and Highways has issued guidelines for mandatory use of waste plastic in Periodic Renewal with hot mixes and in wearing coat of service road on NHs within 50 km periphery of urban area having population of more than 0.5 mn. As of July 2021, 703 km of national highways have been built using this technology. Our conversation with industry players revealed that the impact of using plastic waste has been minimal on the cost of road construction as it is being used to the extent of 5-10% of total raw material consumed. This translated into an overall cost reduction of less than 0.5% of total cost of construction.

**India has mandated use of plastic waste for making bitumen roads surrounding the metro areas**

**Exhibit 38: Wet process of using plastic waste in road construction**



Source: Azo materials, Kotak Institutional Equities

### **Conclusion**

We believe consumer staple companies will witness increase in their packaging costs as the mandatory requirements of recycling and use of recycled plastic kick in from FY2025/26 onwards. Cost of compliance with these new norms will be higher in case of: a) transparent; b) food grade and c) flexible packaging especially MLP. We expect these companies to develop/modify their targets/strategies to incorporate reduce, reuse and recycling of plastic in their product packaging. We believe mechanical recycling as well as chemical recycling will have to work hand-in-hand to tackle the mammoth problem of growing plastic waste. While the cost of chemically recycling plastic is elevated currently, we expect the same to come down gradually with capacity expansion and technological advancements. Innovative packaging companies and plastic recycling companies will emerge as clear beneficiaries of India's progression towards having lower plastic packaging footprint.

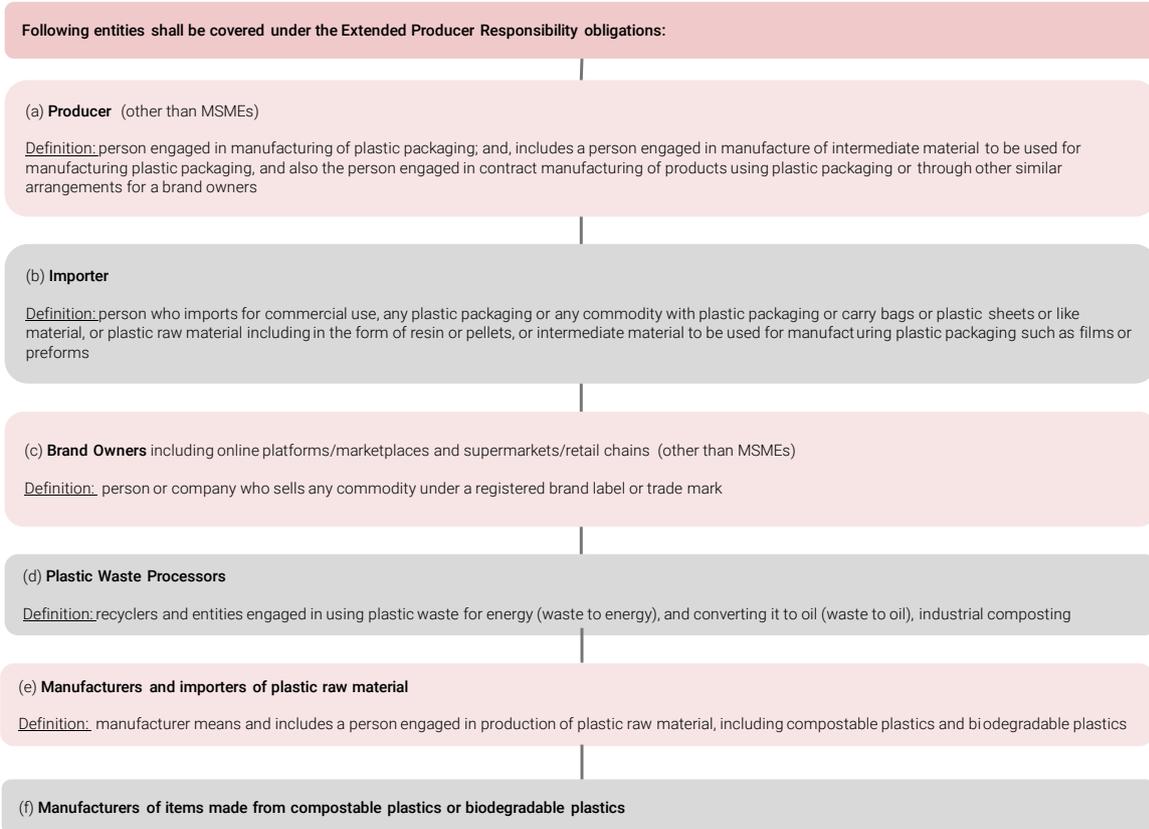
# A1

## Appendix 1: PWM rules—Other general provisions

The new PWM rules are applicable to a list of obligated entities which have been defined in the law (see Exhibit 39).

### PWM rules will be applicable to producers, importers, brand owners, plastic waste processors, manufacturers and importers of plastic raw material and manufacturers of items made from compostable plastics or biodegradable plastics

**Exhibit 39: Categories and definitions of entities covered under the PWM rules**



Source: MOEFCC, Kotak Institutional Equities

The PWM rules have also specified the obligation of producers and importers of plastic packaging to re-collect (EPR effective FY2022), recycle (effective FY2025) and use recycled plastic in the new packaging products manufactured/used by them (effective FY2026), with the minimum thresholds for each becoming more stringent over the years (see Exhibit 40).

**PWM mandates producers and importers to recycle at least 50% of rigid plastics and 30% of flexible plastics and MLP from FY2025**

**Exhibit 40: PWM targets for plastic producers/importers, March fiscal year-ends, FY2022 and onward**

**Plastic recycling rules for producers/importers**

<b>(i) EPR (% of Q1/Q2- category wise)</b>			
	<b>FY2022</b>	<b>FY2023</b>	<b>FY2024</b>
	25%	70%	100%

<b>(ii) Min level of recycling (% of EPR target)</b>				
	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028 and onwards</b>
Category I	50%	60%	70%	80%
Category II	30%	40%	50%	60%
Category III	30%	40%	50%	60%
Category IV	50%	60%	70%	80%

<b>(iii) Use of recycled plastic content (% of plastic manufactured/imported for the year)</b>				
	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029 and onwards</b>
Category I	30%	40%	50%	60%
Category II	10%	10%	20%	20%
Category III	5%	5%	10%	10%

**Notes:**

(a) Q1 is the Eligible Quantity in MT which shall be the average weight of plastic packaging material (category-wise) sold in the last two financial years (A) plus average quantity of pre-consumer plastic packaging waste in the last two financial years (B) minus the annual quantity (C) supplied to Brand owners (BOs) in the previous financial year as:  $Q1 \text{ (in MT)} = A+B-C$

(b) Q2 is the Eligible Quantity in MT which shall be the average weight of all plastic packaging material and / or plastic packaging of imported products (category-wise) imported and sold in the last two financial years (A) plus average quantity of pre-consumer plastic packaging in the last two financial years (B) waste minus the annual quantity (C) supplied to Brand Owners (BOs) in the previous financial years as:  $Q2 \text{ (in MT)} = (A + B) - C$

Source: MOEFCC, Kotak Institutional Equities

The Central Pollution Control Board (CPCB) has also laid down the guidelines for the imposition and collection of environment compensation on producers, importers and brand-owners, recyclers and end-of-life processors, in case of the non-fulfilment of obligations set out in these guidelines. The board has levied an initial compensation of Rs5,000/ton for shortfall in EPR targets specified in the guidelines, which will increase further for repeated lapses (see Exhibit 41).

**An initial environmental compensation of Rs5,000 per ton will be levied upon any shortfall in EPR targets by PIBOs**

**Exhibit 41: Environmental compensation levied for shortfall in EPR targets specified in PWM rules**

Provisions	Violator	Violation	Environmental compensation
Environmental Compensation shall be levied based upon polluter pays principle, with respect to nonfulfillment of Extended Producer Responsibility targets by Producers, Importers & Brand Owners	Producers, importers and brand Owners	Shortfall in EPR Target in following types: 1. Recycling 2. End of life recycling 3. Mandated use of recycled plastic 1. Reuse of Plastic (Cat I)	<ul style="list-style-type: none"> <li>• EC to be levied at: - Rs.5000/- per ton for the 1st time - Rs.10000/- per ton for 2nd time and - Rs.20000/- per ton for 3rd time)</li> <li>• EC can be carried forward up to 3 years as per EPR guidelines.<sup>a</sup></li> </ul>

**Notes:**

a) Payment of environmental compensation (EC) shall not absolve the producers, importers & brand-owners of the obligations set out. The unfulfilled EPR obligations for a particular year will be carried forward to the next year for a period of three years. In case, the shortfall of EPR obligation is addressed within three years. The environmental compensation levied shall be returned to the producers, importers & brand-owners as given below, namely:

- i. Within one year of levying of EC: 75% return;
- ii. Within two years 60% return;
- iii. Within three years 40% return,

After completion of three years on EC getting due the entire environmental compensation amount shall be forfeited.

EC charges will be reviewed every six-months and to be kept higher (~15-20%) than the prevailing EPR Credit charges from market to ensure that it acts as deterrent.

Source: CPCB, Kotak Institutional Equities

PIBOs can also meet their EPR obligations under a category by purchasing surplus EPR certificates from other PIBOs of the same category. The CPCB will issue guidelines for authorization of agencies for establishment of electronic platform for trade of these certificates between obligated entities. The latest guidelines have specified that the CPCB will also be responsible for fixing the price range of these certificates. These certificates will be priced in the range of 30% to 100% of the environment compensation specified above (see Exhibit 41) for the non-fulfilment of EPR obligations.

# A2

## Appendix 2: EU plastic recycling norms

In recent years, the EU has adopted the most aggressive approach to tackle the problem of plastic waste by announcing consecutive policy measures. The European Commission (EC) published its first Europe-wide strategy on plastics in a circular economy in January 2018, which then culminated in banning of certain single-use plastics in 2019 (see Exhibits 42-43). On November 30, 2022, the EC released its final proposal for an updated packaging and packaging waste regulations under its circular economy action plan. Its objective is to ensure that all packaging is reusable or recyclable in an economically feasible way by 2030.

### EU has been consistently trying to up the standards on plastic regulation

#### Exhibit 42: Key milestones in evolution of EU's policy on packaging

Timeline	Event
2018	First continent-wide plastic strategy introduced which pledged to make all plastic packaging on the EU market recyclable by 2030, reduce the consumption of single-use plastics and restrict the intentional use of microplastics
2019	EU proposed to ban the sale of ten single-use plastic items from July 3, 2021 and proposed other specific targets (see Exhibit 43)
2022-23	The European Commission released its final proposal for an updated packaging and packaging waste regulations requiring all EU countries to ensure that extended producer responsibility schemes are established for all packaging by end of 2024 alongside certain specific targets for recycling (see Exhibit 44)

Source: Kotak Institutional Equities

### EU banned the 10 most commonly found single-use plastic items on Europe's beaches in 2019

#### Exhibit 43: Key elements of EU's directive on Single-use plastic products/improving specific targets in 2019

Items banned	Specific targets
Cotton bud sticks	77% separate collection target for plastic bottles by 2025 – increasing to 90% by 2029
Cutlery, plates, straws and stirrers	Incorporating 25% of recycled plastic in PET beverage bottles from 2025, and 30% in all plastic beverage bottles from 2030
Balloons and sticks for balloons	
Food containers	
Cups for beverages	
Beverage containers	
Cigarette butts	
Plastic bags	
Packets and wrappers	
Wet wipes and sanitary items	

Source: European commission, Kotak Institutional Equities

The new plastic waste management rules notified in November 2022 have proposed: 1) higher targets for overall recycling for packaging (see Exhibit 44); 2) minimum recycled content targets for the plastic part in packaging (see Exhibit 45); and 3) progressively reduce packaging waste (see Exhibit 46). These targets are built on the 3R principle of Reduce, Reuse and Recycle.

**EU aims to achieve recycling of 55% of plastic packaging waste by 2030**

**Exhibit 44:** Proposed targets for recycling packaging waste as % of packaging waste generated, Calendar year ends, 2025 and 2030 (%)

	Current targets	By 2025	By 2030
All packaging	55%	65%	70%
Plastic	25%	50%	55%
Wood	15%	25%	30%
Ferros metals	50% (incl Al)	70%	80%
Aluminium	0%	50%	60%
Glass	60%	70%	75%
Paper and cardboard	60%	75%	85%

Source: European commission, Kotak Institutional Equities

**EU has proposed targets as high as 65% for use of recycled plastic in beverage bottles from 2040**

**Exhibit 45:** Proposed targets for minimum recycled plastic to be used per unit of packaging

Type of packaging	From 1st January 2030	From 1st January 2040
Contact sensitive packaging made from polyethylene terephthalate (PET)	30%	50%
Contact sensitive packaging made from plastic materials other than PET, except single use plastic beverage bottles	7.5%	25%
Single-use plastic beverage bottles	30%	65%
Other packaging	35%	65%

Source: European Commission, Kotak Institutional Equities

**EU requires its member states to progressively reduce the packaging waste over the next two decades**

**Exhibit 46:** Proposed targets for packaging waste reduction compared to 2018, Calendar year ends, 2030, 2035 and 2040

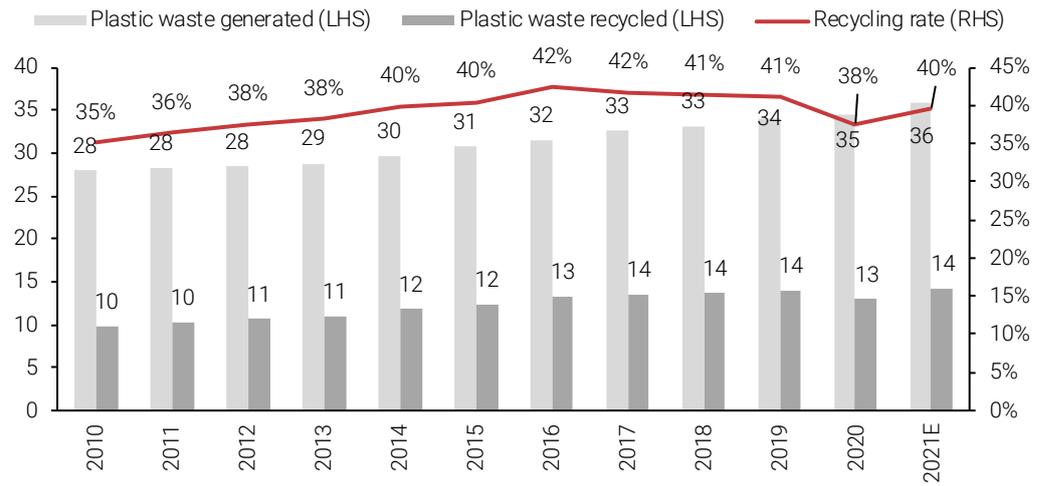
	By 2030	By 2035	By 2040
Reduction of packaging waste generated per capita	5%	10%	15%

Source: European Commission, Kotak Institutional Equities

The EU has been able to demonstrate moderate success in scaling up recycling of plastic packaging waste. Between 2010 and 2020, the volume of plastic packaging waste generated per inhabitant increased by 23% (+6.5 kg) in the EU, whereas the volumes of recycled plastic packaging waste increased over the same period, by 32% (+3.2 kg) (see Exhibit 47).

**Plastic waste recycling rate has increased by ~300 bps from 2010 to 2020 in EU**

**Exhibit 47: Total plastic waste generated and recycled, December calendar year-ends, 2010-21, (kg per capita, %)**



Notes:

(1) The 2021 numbers are estimated by EUROSTAT

Source: EUROSTAT, Kotak Institutional Equities

# A3

## Appendix 3: Plastics: Defining the basic concepts

Plastics are polymers made up of synthetic or semi-synthetic organic carbon containing compounds called monomers, mostly derived from natural gas and crude oil. It is derived by adding certain additives such as (1) plasticizers- to make them more flexible; (2) fillers and stabilizers- to make them heavier and more durable; and (3) colorants, etc. to the monomers and subjected to certain specific reaction parameters in the presence of a catalyst. The kind of reaction and the type and number of additives added to the monomer determine the properties of plastic such as: opaque or transparent; flexible or rigid. Additives are however known to be harmful for both the environment as well as human health and make plastic recycling even more difficult.

Plastics can primarily be classified on the basis of three criteria: (1) Behavior to heat; (2) Chemical structure and (3) Resin Identification Codes (RIC) (see Exhibit 48).

### RIC-based classification of plastics is the most widely used criterion for classification

**Exhibit 48:** Classification of plastics based on three main criteria

Behavior to heat	Structure	Resin Identification Codes (RIC)
Thermoplastic	Heterogenous	PET: Polyethylene terephthalate
Thermoset	Homogenous	HDPE: High-density polyethylene
		PVC: Polyvinyl chloride
		LDPE: Low-density polyethylene
		PP: Polypropylene
		PS: Polystyrene
		Others

Source: CSE, Kotak Institutional Equities

► Behavior to heat:

- Thermo-plastic is any plastic polymer material that becomes pliable or moldable at a certain elevated temperature and solidifies upon cooling.
- Thermoset plastic retains its form and stay solid under heat once cured which toughens the polymer material
- Around 94% plastic in India comprises thermoplastic content such as PET, LDPE, HDPE and PVC (as per CPCB), which is recyclable. However, the remaining 6% belongs to a family of thermoset and other categories of plastics (such as sheet molding compound—SMC, fiber reinforced plastic—FRP, etc.), which are non-recyclable.

► Chemical structure:

- Heterogenous polymers have more than one monomer running across the polymeric chain
- Homogenous polymers have the same monomer running across the polymeric chain. They are much easier to process and recycle than heterogenous polymers

► Resin Identification Codes (RIC):

- The three most common types of thermoplastics by volume are: (1) Polyethylene (PE) available as LDPE, LLDPE and HDPE; (2) Polypropylene (PP); and (3) PVC (see Exhibit 49).

**India mainly recycles PET, HDPE and PVC plastics until now**

**Exhibit 49: RIC-based classification of plastics along with their characteristics and uses**

Resin Identification Code (RIC)	Polymer type	Characteristics	Applications	Recyclability in India
	PET: Polyethylene terephthalate	Most common thermoplastic polymer resin which is clear, strong, lightweight and 100% recyclable	Soft drinks and water bottles, food packaging, fibers for clothing, combined with glass fibers for engineering resins	 Recyclable
	HDPE: Highdensity polyethylene	One of the most versatile plastic materials made from petroleum	plastic bottles, milk jugs, shampoo bottles, bleach bottles, cutting boards, and piping	 Recyclable
	PVC: Polyvinyl chloride	High-strength thermoplastic material	used in the building and construction industry to produce door and window profiles, drinking and wastewater pipes, wire and cable insulation, medical devices	 Recyclable
	LDPE: Low-density polyethylene	Soft, flexible, lightweight plastic material noted for its low temperature flexibility, toughness, and corrosion resistance	various containers, dispensing and squeeze bottles, tubing, plastic parts of computer components, moulded laboratory equipment and caps and closures	 Partially recyclable
	PP: Polypropylene	Tough, rigid, and crystalline thermoplastic and is the lightest polymer among all commodity plastics	plastic packaging for ketchup, syrups yogurt etc., plastic parts for machinery and equipment, fibers and textiles	 Partially recyclable
	PS: Polystyrene	Lightweight and easy to form into various shapes	everyday items such as disposable coffee cups, plastic food boxes, plastic cutlery, and packing material	 Partially recyclable
	Others	Other plastics	5 gallon water bottles, other plastics including acrylic, nylon, fiberglass etc	 Non-recyclable

**Notes:**

(a) PVC is recyclable but must be recycled separately from other plastic waste and materials due to the high chlorine content in raw PVC.

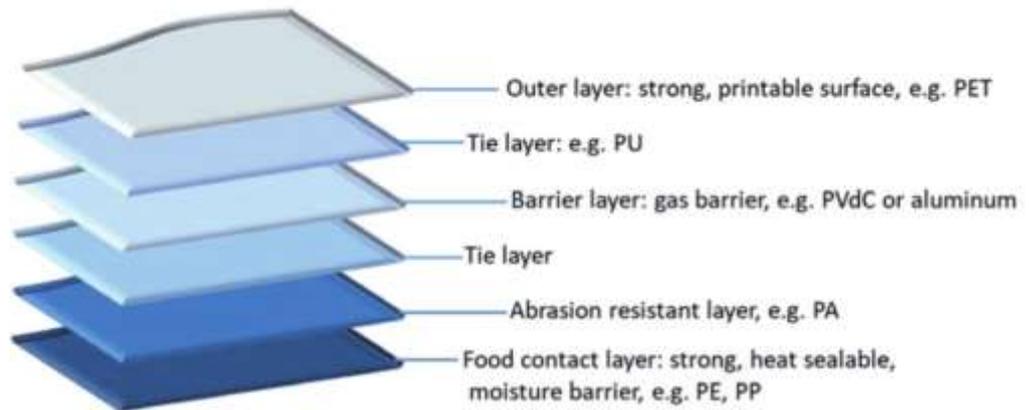
Source: CSE, Kotak Institutional Equities

**Multilayered plastic (MLP)**

- ▶ Another commonly found plastic packaging is MLP has become one of the favorite packaging materials in the fast-moving consumer goods (FMCG) and the packaged- food industry due to its distinct qualities (see Exhibit 50).
- ▶ According to the Plastic Waste Management (PWM) Rules 2016, MLP is “any material used for packaging and having at least one layer of plastic as the main ingredient in combination with one or more layers of materials such as paper, paper board, polymeric materials, aluminum foil, either in the form of laminate or co-extruded structure.”
- ▶ It is lightweight, making its transportation easy, and is also graphics-friendly.
- ▶ However, it is difficult to recycle it owing to its complicated structure and presence of non-plastic components.

### MLP is the most preferred packaging material for consumer goods by FMCG companies owing to its unique properties

Exhibit 50: Structure of commonly used MLP for packaging by FMCG companies



Source: ResearchGate, Kotak Institutional Equities

### Single-Use Plastic (SUP)

- ▶ A universally accepted definition of 'Single-Use Plastics' has not yet emerged. The Plastic Waste Management Rules, amended in 2021, define it as a plastic item intended to be used once for the same purpose before being disposed of or recycled.
- ▶ The United Nation Environment Program (UNEP) in its 2018 report defines it as items being commonly used for plastic packaging, including items intended to be used only once before being thrown away or recycled. These include grocery bags, food packaging, bottles, straws, containers, cups cutlery, etc.
- ▶ SUP is the most popular kind of plastic due to its easy access, cheap value and high utility.
- ▶ However, it remains unrecycled to a great extent due to negligible collection being done in the absence of a lack of financial incentives and involvement of extensive manual efforts.

# A4

## Appendix 4: SUP ban regulation

To curb the growing SUP problem, the MOEFCC has banned the manufacturing, import, stocking, distribution, sale and use of nineteen SUP items (see Exhibit 51) from July 1, 2022. The ban on the aforementioned items covered only 2-3% of total primary plastic production capacity in FY2022, as per an estimate by the CSE (see Exhibit 52).

### 19 items were placed under ban by the ministry based on their high environmental adverse impact score and low utility score

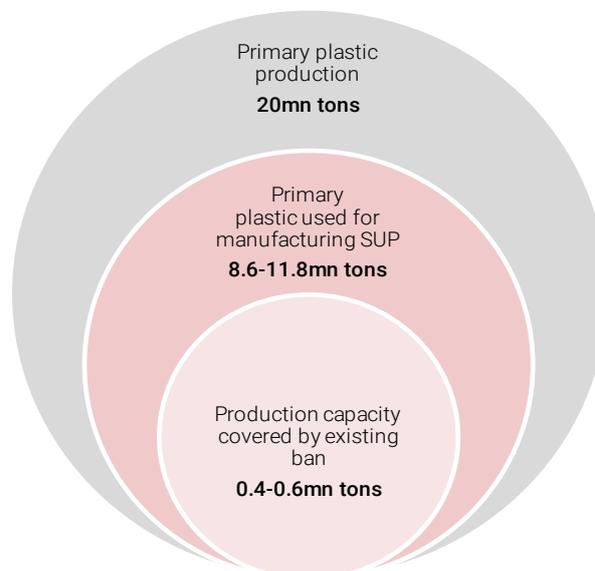
**Exhibit 51: List of SUP items placed under ban from July 1, 2022**

Ear buds with plastic sticks
Plastic sticks for balloons
Plastic flags
Candy sticks
Ice-cream sticks
Polystyrene [Thermocol] for decoration
Plates
Cups
Glasses
Cutlery such as forks, spoons, knives
Straw
Trays
Wrapping or packing films around sweet boxes
Wrapping or packing films around invitation cards
Wrapping or packing films around Cigarette packets
Invitation cards
Cigarette packs
Plastic or PVC banners less than 100 micron
Stirrers

Source: MoEFCC, Kotak Institutional Equities

### Current SUP ban covered ~2-3% of total primary plastic production capacity in India

**Exhibit 52: Scope of SUP ban in India, March fiscal year end, 2022**



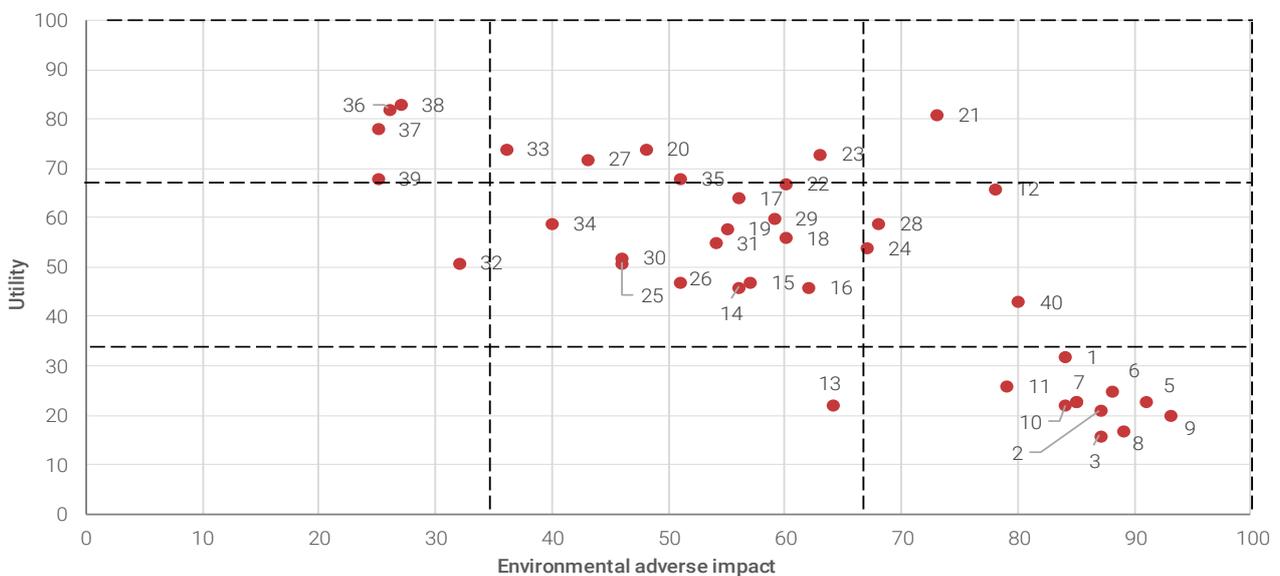
Source: CSE, Kotak Institutional Equities

These items were recommended after conducting a scientific examination of 40 SUP products based on their utility score and environmental adverse impact score (see Exhibit 53). Five factors of utility—hygiene, product safety, essentiality, social impact and economic impact—were considered while the adverse environmental aspects considered were collectability, recyclability, possibility of end-of-life solutions, environmental impact of alternate materials and littering propensity. A product having a low utility score and high adverse environmental impact score indicates an environmentally problematic and mismanaged product which can be placed under ban.

**SUP items having least utility and highest adverse environmental impact score were proposed to be put under ban**

**Exhibit 53: Single Use (Disposable) Plastic products with utility and environmental adverse impact score**

Sr. No.	Name of the item	Sr. No.	Name of the item
1	Carry bags- thin (less than 50 microns)	21	Multilayer packaging (area more than 36cm <sup>2</sup> )
2	Non-woven carry bags and covers (less than 80 gsm and 320 microns)	22	Brick cartons (Tetra Pak and similar)
3	Straws/stirrers	23	Blister packaging for pharmaceutical applications
4	Small Wrapping/Packing films	24	Blister packaging for non-pharma applications
5	Cutlery: Foamed cups, bowl and plates	25	Shopping bags (more than 125 micron thickness)
6	Cutlery: Laminated bowls and plates (non-foamed)	26	Non-woven bags (more than 80 gsm weight and more than 300 micron thickness)
7	Cutlery: Small plastic cups/containers (less than 150 mn and 5 g)	27	Milk and oil pouches
8	Ear buds and plastic sticks (for balloons, flags, candies etc.)	28	Retort pouches for ready-to-eat microwavable and boiling water food items
9	Cigarette filters (non-biodegradable)	29	Shrink film
10	EPS (Thermocol and similar) for decoration	30	Air cushions industrial packaging: Bubble wraps, Foam, Air Pillows
11	Small plastic bottles for drinking water (<= 200ml)	31	Disposable industrial packaging (EPS)
12	Small multilayer pouches/sachets (area less than 36 cm <sup>2</sup> )	32	Films for mulch, silage, greenhouse applications
13	Plastic banners (thickness less than 100 microns)	33	Plastic bottles for food and beverages (more than 200 ml)
14	Disposable rigid cups, trays and containers	34	Plastic bottles for non-food
15	Mailing envelopes	35	Non-woven textile for medical and personal care items
16	Cigarette overwrap films	36	IV bottles
17	Wrapping films for food applications	37	IV bags/Blood bags
18	Wrapping films for e-commerce applications	38	Disposal syringes
19	Cling films (food and industrial packaging)	39	Catheters
20	Bakery and grocery packing films	40	Tea-bags



Source: Ministry of Chemicals and Fertilizers, Kotak Institutional Equities

# A5

## Appendix 5: Alternative plastics—biodegradable and compostable plastics

Biodegradable plastics, biodegradable bioplastics and compostable plastics provide an alternative to conventional plastics, though often, there is confusion about the differences among the terms—bioplastics, biodegradable plastics, compostable plastics and oxo degradable plastics (see Exhibit 54). Not all bioplastics are biodegradable or compostable, while every compostable plastic is biodegradable, but every biodegradable plastic is not compostable.

### All four commonly stated alternative plastics, though used interchangeably, imply different meanings

Exhibit 54: Types and description of alternative plastics

Bio-plastics	Biodegradable plastics	Compostable plastics	Oxo-degradable/ oxydegradable/ oxo-biodegradable plastics
Materials that are either bio-sourced or biodegradable or both and are made from renewable biomass resources, most often corn starch/ sugarcane/ cassava – which might be either biodegradable or not	Plastics, other than compostable plastics, which undergo complete degradation by biological processes under ambient environmental (terrestrial or in water) conditions, in specified time periods, without leaving any micro plastics, or visible, distinguishable or toxic residue, which has adverse environment impacts, adhering to laid down standards of BIS and certified by CPCB	Plastics that undergo degradation by biological processes during composting to yield CO <sub>2</sub> , water, inorganic compounds and biomass at a rate consistent with other known compostable materials, excluding conventional petro-based plastics, and do not leave visible, distinguishable or toxic residue. These can be plant based, but can also be petroleum-based as well. BASF's Ecoflex® is an excellent example of a compostable polymer, which is partly petroleum-based but is compostable at industrial compost facilities.	Conventional plastics such as PE, which include an additive to help them break down into smaller fragments, which could lead to microplastic leakage in the environment

Source: CSE, NITI Aayog, Kotak Institutional Equities

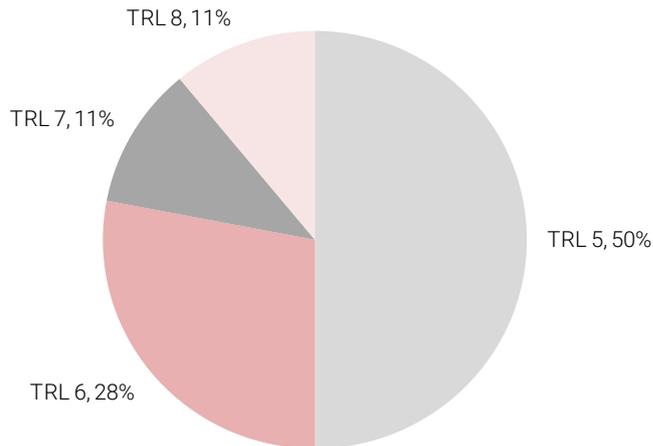
Although the present production and market for bioplastics globally is small, it is expected to witness an impressive growth over the decade. Bioplastics constitute about 1% (or 2.1 mn tons) of all the plastics produced annually according to the industry association European Bioplastics. Although this represents a small fraction of plastic production, NITI Aayog expects bioplastic production to increase by 300,000 metric tons between 2019 and 2024E. The global market for bioplastics and biopolymers is projected to reach US\$14.9 bn by 2024E, registering a CAGR of 15.6% over the analysis period.

However, we need robust technological advancement and consistent fiscal support from government as well as private players as the technology for alternative plastics is very nascent right now. NITI Aayog has also undertaken the Technology Readiness Level (TRL—indicates maturity of a technology determined after examining program concepts, technology requirements, and demonstrated technology capabilities) mapping of the alternative plastic technologies currently being pursued globally as well as in India (see Exhibit 55). Based on this mapping, it can be seen that half of the products are under development and are currently being tested in laboratory conditions that mimic relevant environmental conditions, and very few have managed to upscale their technologies where mass production is possible. NITI Aayog has also highlighted that, currently, there is no manufacturer of essential synthetic biodegradable plastics in India. Hence, there is an immediate need for commercial manufacturing not only for resin but also for monomers to cater to the demand for biodegradable plastics on a sustainable basis as an alternative to current resin for SUP applications.

It is noteworthy that Reliance Industries has been successful in developing a novel process for biodegradable plastic (TRL 6 level). The developed PBAT grades showed good performance in terms of physical and mechanical properties. The developed grades are also compounded with various fillers for ease of downstream processing and enhancing product properties required for applications in flexible and rigid packaging & agriculture mulch films, among others. Though we find the offering to be promising, the economic feasibility and technology scalability of the same are unknown to us.

**TRL distribution for the emerging bio-based products**

**Exhibit 55:** TRL distribution for the emerging bio-based products



Source: NITI Aayog, Kotak Institutional Equities

While the Union Ministry of Environment, Forest and Climate Change is looking at compostable and biodegradable plastics as an alternative to single-use plastic, we believe that the use of these substitutes will increase gradually over time but it is a path that should be tread carefully. The Centre for Science and Environment has also pointed to the new set of irritants that might arise when scaling up biodegradable and compostable plastics (see Exhibit 56).

**Scaling up alternative plastics needs to be done carefully owing to certain complications**

**Exhibit 56:** Additional challenges arising from use of alternative plastics

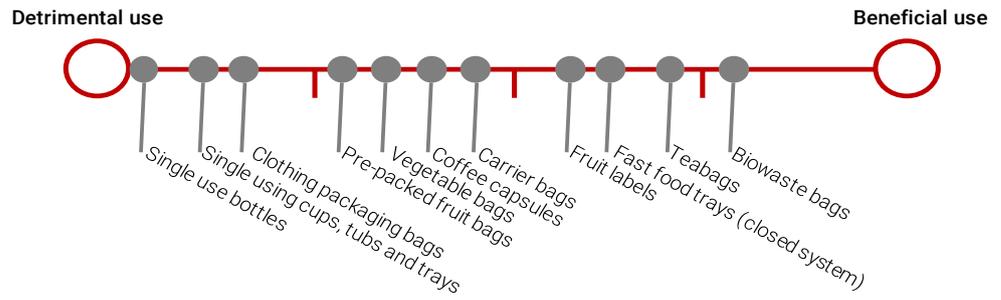
- Compostable plastics have been reported to contaminate the conventional plastic recycling stream. This renders the entire batch of conventional plastic, which could be recycled, useless.
- Potential cost increases arising from additional human-hours, time and unit operations observed at material composting facilities (MCCs) where the time taken for compostable plastic to degrade has been found to be much higher than the six- twelve week period required for organic waste to degrade
- Introduction of compostable and biodegradable plastics in the conventional plastic waste stream will require an additional stream of waste that needs to be segregated and channelised separately in absence of proper solid waste management system in India
- Channelising compostable plastic for composting with other food waste may affect the quality of the compost generated due to the chemical additives, thus influencing the soil fertility and yield

Source: CSE, Kotak Institutional Equities

It is noteworthy that while the European Commission has been deliberating on the issue of using bio-based, biodegradable and compostable plastics since December 2019, only in March 2022 it began the process of conducting intensive public consultations for developing a policy framework on the subject. India, on the other hand, has allowed the use of biodegradable and compostable plastic without a strong regulatory, monitoring or evaluation mechanism. We believe that India also needs to have strong regulatory mechanism in place to avert the risk of having additional challenges to tackle that could result from the unregulated use of biodegradable and compostable plastics. The use of compostable plastic should be limited—or even better—mandated for specific applications only where the probability of conventional plastic recycling is negligible or low (see Exhibit 57).

**The use of compostable plastics should be limited to certain specific applications where scope of recycling is low or limited**

**Exhibit 57: Compostable plastics – beneficial and detrimental uses**



Source: CSE, Relevance of Biodegradable and compostable consumer plastic products and packaging in a circular economy, Eunomia, 2020, Kotak Institutional Equities

# A6

## Appendix 6: Types of plastic recycling

Plastic waste can either be used in landfilling or recycled. There are four main types of recycling that post-consumer plastic materials can undergo: primary recycling, secondary recycling, tertiary recycling and quaternary recycling (see Exhibit 58):

**Primary recycling is the most preferred option due to no contamination, lower energy and resource usage**

**Exhibit 58: Types of plastic recycling**

Mechanical		Chemical	
Primary	Secondary	Tertiary	Quaternary
Uses recycled materials to create a product that serves a similar function	Uses recycled materials to make a new product	Plastic waste can be converted to oil, gas or its monomeric constituents by chemical conversion which can then be used as fuel	(i) Energy recovery in Waste-to-energy plants and incineration facilities or co-processing in cement kilns.  (ii) Alternate use: use of material for a purpose other than for which it was conceived—like road making with plastic waste

Source: Kotak Institutional Equities

Based on the latest available estimate by the Centre for Science and Environment, around 94.2% of plastic waste in India is recycled using mechanical recycling, 0.8% of plastic waste is treated using chemical recycling and remaining 5% is recycled using quaternary recycling.

- ▶ Mechanical recycling is an essential tool in an environmentally and economically sustainable economy of plastics, but current mechanical recycling processes are limited by cost, degradation of mechanical properties and inconsistent quality of products.
- ▶ Plastic-to-plastic (P2P) tertiary recycling, at present, is technically challenging and uneconomical. Most plants that claim to do chemical recycling are turning plastic into fuel (P2F), which is via incineration.
- ▶ In India, most of the plastic waste treated using energy recovery under quaternary recycling is co-processed in cement plants or sent to waste-to-energy plants to be used as an alternative fuel in the incineration process.
- ▶ One classic example of alternate use is the use of plastics in bitumen roadmaking that has been mandated at a minimum of 5% of the weight of the bitumen being used. This process, however, has its limitations in terms of feedstock as it cannot take black plastic, which is a result of repeated recycling and does not have the desired binding properties or PVC.
- ▶ More research is needed to understand the long-term effects of plastic being used for alternate purposes in various set-ups to recognize and address questions such as leaching, environmental degradation potential, micro-plastic forming potential and other effects on human health.
- ▶ Only in the absence of an environmentally feasible solution such as mechanical recycling, one should think of moving down the hierarchy to 'band-aid' solutions such as energy recovery.

# A7

## Appendix 7: Plastic waste related initiatives taken by consumer companies

### Britannia Industries

Britannia has taken several initiatives for developing sustainable packaging for its products (see Exhibit 59). The company has adopted a cradle-to-grave approach since FY2014 for designing its packaging. It has invested in R&D and innovation for (1) reducing the intensity of plastic packaging by successfully implementing tray removal programs for some its products portfolio and (2) developing recyclable laminates/biodegradable plastics for improving circularity for packaging. The company is awaiting an enabling regulatory environment for the reuse of recycled plastic for primary packaging for food products and is yet to announce its targets for mandatory recycling and reuse of plastic packaging in its products. Britannia has been awarded with Global Sustainability Leadership Awards 2021 for sustainable packaging design by the World Sustainability Congress.

- ▶ **EPR compliance:** Britannia aims to remain 100% EPR compliant. The company has collected and disposed 83,500 tons of plastic waste with the help of its PROs since FY2021 (see Exhibit 60), thereby enabling to maintain its plastic neutral status since March 2022.
- ▶ **Plastic intensity reduction:** Investments in R&D have helped the company improve its packaging and remove plastic tray from its product portfolio (see Exhibit 61). As a result, many of the products are now 'Tray Free'. On annualized basis, ~4,75,000 kgs of the plastic trays have been successfully removed over the years on the back of R&D programs. The company in the past has been able to reduce its plastic consumption per ton of finished goods by 2% to 0.0217 in FY2022 from 0.0221 in FY2020. Further, it has reduced the consumption of laminates by 8.3%/kg in FY2022.
- ▶ **Shift to recyclable/biodegradable plastic by 2024:** Britannia is focused on expanding the use of sustainable packaging for achieving its circular economy ambitions. It aims to shift to 100% recyclable or bio-degradable laminate packaging in its portfolio by end-2024. The company has successfully developed fully recyclable polypropylene-based laminate and ~72% of the laminate used in its product portfolio during FY2023 was recyclable. It has been working with a UK-based institute on biodegradable packaging and a pilot project will commence shortly.
- ▶ **Reducing use of virgin plastics:** Britannia has developed options to use special enhancers, fillers and recycled polymer, thus reducing the usage of virgin plastics by around 35% in secondary packaging bags in FY2022. It has also been successful in reducing the consumption of ~7,50,000 kgs of virgin plastic in secondary packaging over the years until FY2022, which was more than twice the 3,50,000 kgs target set for the year.

### Britannia has progressively reduced its plastic consumption by implementing multiple initiatives

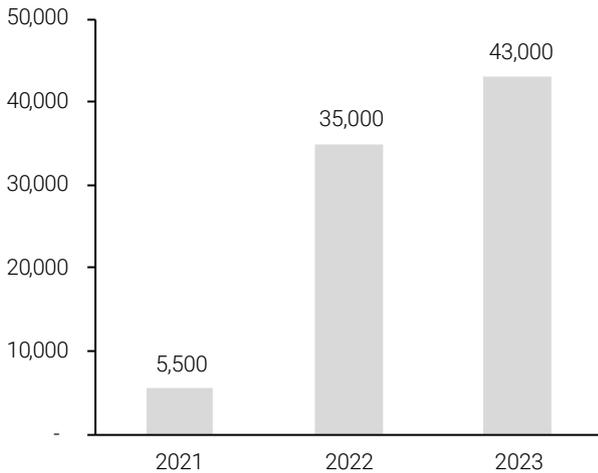
Exhibit 59: Initiatives undertaken by Britannia toward sustainable packaging

Laminate reduction	Reduced laminate consumption by about 4% per kg of products in FY2021 and 8.3%/kg in FY2022 via re-engineering its packaging and internal innovation
Tray removal	*Reduced 531 tons of plastic trays from the portfolio since the program inception in FY2021, representing more than 17% of the total tray tonnage *As a result, many of the products- Treat Cream Biscuits, MilkBikis Milk Cream Biscuits, Treat Jim Jam, Nutrchoice Oats & Nice Time, which earlier contained plastic tray in the packaging are now 'Tray Free'
Non-plastic additives in secondary plastics packaging	Introduction of non-plastic additives in secondary packaging materials has helped in avoiding 7,00,000 kgs+ virgin plastics, amounting to 30% of total virgin plastics usage
Recyclable Laminate/ Biodegradable materials	In FY2023, the company used 72% of recyclable laminates in its packaging
Usage of recycled Plastics	*Pilot was started in FY2022 to use 35% recycled content in its secondary packaging. Post full rollout, this could translate to ~14,00,000 kgs of recycled material usage in its portfolio *The company achieved ~72% of consumption of recyclable laminates in its total plastic consumption

Source: Company, Kotak Institutional Equities

**Britannia achieved its plastic neutral status in March 2022 by collecting ~35,000 tons of plastic waste**

Exhibit 60: Total plastic waste collected and disposed by Britannia under EPR, March fiscal year-ends, 2021-23 (tons)



Source: Company, Kotak Institutional Equities

**Britannia has reduced 531 tons of plastic from its product portfolio since FY2021 by removing plastic trays**

Exhibit 61: Image depicting plastic tray removal from Britannia’s biscuit pack



Source: Company, Kotak Institutional Equities

**Colgate**

Colgate (India) like its parent to focus on innovating its packaging to use more recycled plastic, less plastic, or no plastic, as it works toward its 2025 targets to have (1) all packaging recyclable, reusable, or compostable, (2) reduce virgin plastic by one-third (from 2019 baseline), (3) achieving zero waste to landfill by 2025 and (4) continue to achieve 100% of plastic waste collection under EPR every year. However, unlike the parent, it is yet to announce any targets on the use of post-consumer recycled plastic in packaging (Colgate USA: target of 25%).

- ▶ **EPR compliance:** It is registered with the CPCB as a brand owner and collaborates with authorized recyclers for the recycling and co-processing of post-consumer packaging material. It has started collecting multi-layered plastic (MLP) in the 12 states of India. This is being done in partnership with NEPRA and The Shakti Plastics Industry wherein the collected plastic is diverted to cement kilns for energy recovery. In FY2023, the company censured plastic positivity and collected 13,428 tons of plastic (~120% of what it introduced), of which 28% was recycled, and 72% was used for energy recovery or co-processing.
- ▶ **End-to-end plastic waste management:** It has adopted a holistic approach by tackling plastic waste across the entire value chain (see Exhibit 62).

**Colgate aims to eliminate plastic waste by adopting a holistic approach**

Exhibit 62: Colgate’s Packaging and Plastics sustainability strategy



Source: Company, Kotak Institutional Equities

- ▶ **Creating circular economy at design stage:** Colgate-Palmolive (India) has been promoting a circular economy for over a decade, prioritizing the use of recycled and recyclable materials during the design phase of its products (see Exhibit 63). Colgate-Palmolive is the world’s first to manufacture recyclable toothpaste tubes and use it for Colgate Active Salt and Vedshakti variants. In FY2023, 73% of all the company's packaging materials (including paper, plastic, metals, etc.) were made from renewable sources and 80% by weight was recyclable.

**Colgate India has been prioritizing the use of recycled and recyclable materials in product design and packaging**

**Exhibit 63: Key sustainable packaging Initiatives taken by Colgate India**

The company has launched India's first ever recyclable toothpaste tube and RecyClean, the first recycled toothbrush, where the bristles are plant derived and are BPA free while the handle is made from 100% recycled plastic.

100% of its BOPP films used for bundling of cartons in toothpaste are made of mono-material. Usage of mono- material with increased thickness enables easy recovery and recycling at the end of its life cycle, thereby reducing waste to landfill and preventing contamination of water bodies.

The company makes toothbrush blisters from 80% rPET. This has led to reduced consumption of virgin PET (Plastics) material and industrial and consumer waste (PCR) consequently.

The company is working on eliminating PVC from packaging

Source: Company, Kotak Institutional Equities

- ▶ **Global Initiatives:** Colgate (USA) has 400+ plastics-related projects underway. They are spread across: 1) rev up recyclability + recycling infrastructure (see Exhibit 64); 2) reimagining packaging and product forms (see Exhibits 65 and 66); 3) reducing the plastic required (see Exhibits 67 and 68); (4) using more post-consumer recycled plastic instead of new plastic; 5) promoting refill packaging (see Exhibits 69 and 70); and 6) recovering plastic. The Indian company can gain by leveraging from the global parents’ initiatives.

**Colgate is focused on revving up plastic recyclability and recycling infrastructure by collaborating with various organizations**

**Exhibit 64: Plastic recycling-related partnerships entered into by Colgate (USA)**

The company has partnered with The Association of Plastics Recyclers and RecyClass to approve our pioneering tube for recycling in existing HDPE plastic bottle recycling streams

It is working with The Recycling Partnership’s Pathway to Circularity and the Stina Tube Recyclability Project to further acceptance of these tubes by more municipalities and recyclers

It is involved with plastics-reform networks like the Consumer Goods Forum Plastics Waste Coalition of Action, Re:Source Plastic and U.S. Plastics Pact which bring together private companies, NGOs, governments and recyclers to expedite recycling best practices

The company is investing with Closed Loop Partners to scale sustainable products, services and infrastructure

Source: Company, Kotak Institutional Equities

**Innovative product formats allow for plastic-free packaging**

Exhibit 65: Toothpaste tablets in a reusable and refillable tin container



Source: Company, Kotak Institutional Equities

**Use of natural materials offers environmental advantages**

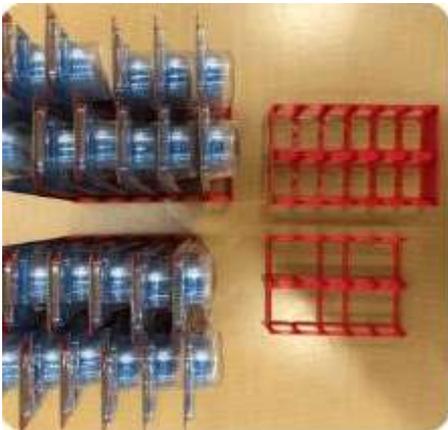
Exhibit 66: Bamboo toothbrushes feature handles made from 100% natural bamboo



Source: Company, Kotak Institutional Equities

**Colgate is also reducing plastic used for shipping and for display at retail shelf**

Exhibit 67: Red toothbrush display trays using 50% less plastic



Source: Company, Kotak Institutional Equities

**Colgate is rolling out recyclable tubes across global markets**

Exhibit 68: First-of-its-kind recyclable toothpaste tube



Source: Company, Kotak Institutional Equities

**Colgate is testing Algramo's "refill on the go" model in a Target Open House store in California**

Exhibit 69: Bulk refill stations offered by Algramo in residential areas and retail centers



Source: Company, Kotak Institutional Equities

**Colgate has started turning recovered plastic waste into eco-bricks and made into Wash & Brush Stations under its plastic waste collection program in the Philippines**

Exhibit 70: Plastic waste collection program launched in Philippines



Source: Company, Kotak Institutional Equities

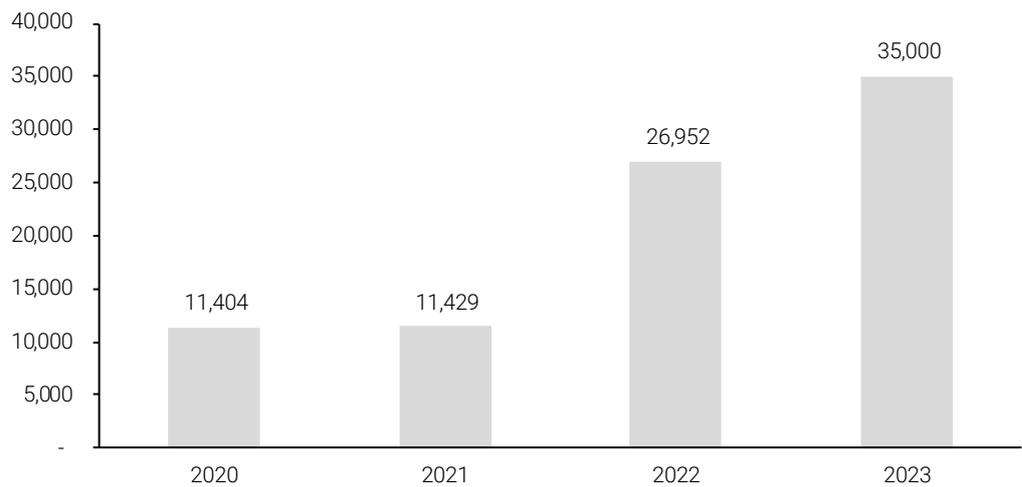
**Dabur India**

Dabur India (Dabur) after turning plastic positive in FY2023 aims to use 80% reusable, recyclable, or compostable packaging (2023: 54% recyclable) by 2028. Further, in line with the PWM norms, the company has set up a target to use 30%, 10%, and 5% of recycled plastic packaging content in plastic packaging of non-food grade items for Category I, Category II, and Category III plastics, respectively, by FY2026. The company is also focusing to increase the community awareness and ecosystem for plastic recycling.

- ▶ **EPR compliance:** In FY2023, Dabur became a plastic waste positive enterprise by recycling and coprocessing 35,000 tons of post-consumer plastic waste (see Exhibit 71). This covers both recyclables (such as PET, HDPE and beverage cartons) and non-recyclables (multi-layered plastic). Dabur’s EPR journey started in 2016 by appointing NEPRA for a waste management study of all its units for obtaining authentic data for EPR liability of all the packaging categories by qualitative and quantitative analysis. 67% of the total plastic waste generated by the company was recycled in FY2023.

**Dabur India became a plastic waste positive company in FY2023**

**Exhibit 71: Total plastic waste collected under EPR, March fiscal year-ends, 2020-23 (tons)**



Source: Company, Kotak Institutional Equities

- ▶ **Packaging innovation for reducing plastic usage:** Dabur has taken a strategic approach toward continuously improving its packaging with a focus on making it light and right. In terms of packaging, it executed 18 projects in FY2023 across verticals with respect to product packaging design changes, weight reduction and transition to sustainable packaging materials (see Exhibit 72). Due to these innovative projects, the cumulative potential reduction in the consumption of the mentioned packaging materials has been 369.71 Mt.
- ▶ **Reusing recycled content in packaging:** The company has set a target to reuse recycled plastic packaging content in plastic packaging of non-food grade items as per the PWM rules from FY2026 (2023: Nil). The company is planning to move to using 30% recycled PET in its packaging of toilet cleaner brand Sanifresh. 54% of its packaging was recyclable in FY2023.
- ▶ **Creating awareness/ecosystem for plastic recycling:** To support its plastic waste management initiatives, Dabur has been running a series of community-led interventions aimed at creating awareness about plastic waste management within the community and educational institutions (see Exhibit 73).

**Dabur India has taken a strategic approach toward continuously improving its packaging for making it sustainable**

**Exhibit 72: Key packaging initiatives undertaken by the company during the year, March fiscal year-end, 2023**

Ideas and development	Business impact on		
	Environment	Organization	Aesthetics
Optimization in Vatika Sachet wholesale Pack	5.85 tons of virgin plastic reduction annually through structure optimisation 80% reduction in ink usage through artwork redesign, making recyclability easier	Annual savings of Rs5 mn	
Innovative Foldable Spoon for FEM & OxyLife Bleaches	1 ton plastic reduction annually through Spoon Weight optimization	Improvement in packing line process, resulting in annual monetary gains of rs1.2 mn	
Value engineering in Shrink Film manufacturing		Annualized savings of Rs20 mn through value engineering of LDPE shrink film used in wholesale packages	
Consumer Convenient Comb applicator for Dabur Vatika Neelibhringa 21			New innovative comb shape applicator to dispense oil directly on scalp Achieved consumer convenience through easy dispensing
Himalayan Shilajit in Paper composite Can	Green Packaging introduced with secondary packaging made of composite paper and primary packaging made of glass & metal cap		Premium pack format to enhance appeal and target generate sales
New Sanifresh cap design innovation with 25% weight reduction	Reduced usage of virgin plastic by 6.9 tons	Rs1 mn saved through plastic weight reduction	Improved appearance of packaging
Introduced new substrate for Vatika shampoo labels	Reduction of 0.7 tons of virgin plastic annually	Annual savings of Rs0.5 mn by way of plastic usage reduction	
Introduced a paper and non-woven combination alternate for Tyvek pouch for Odonil Zipper	Tyvek grade is spun bound polymer. Compared to it, we have developed a more sustainable paper + nonwoven pouch	Import substitution of existing packaging raw material	
Design innovation to introduce ASTER cap for Amla flankers affordable LUPs	120 tons of Virgin Plastic usage reduced annually	Cost saving of Rs30 mn annually	Flip part of the cap is redesigned to give it better shelf aesthetics
Shift from Paper straw to PLA Straw	Use of bioplastics, which is a better alternative to plastics and are compostable, as per Govt. standards	Cheaper alternative to paper straws	
Gulab Jamun Pouch printed by flexo print	Reduced CO2 emissions due to reduced truck load. Reduced CO2 emissions due to less energy consumption in production of PET bottles	Cheaper alternative with lower minimum order quantities. Now, we can get even low volumes of supply at effective prices enabling us to launch a new product with minimum quantity and ensure no wastages.	
Packaging Revamp of Asav from Glass to PET bottle	Reduced CO2 emissions due to reduced truck load. Reduced CO2 emissions due to less energy consumption in production of PET bottles	Annualized Savings of Rs5 mn Dependency eliminated for single-source glass bottle	

Source: Company, Kotak Institutional Equities

**Dabur India has taken various initiatives for plastic waste management and awareness in society**

**Exhibit 73: Community-led initiatives for plastic waste management**

Safai saathi training program	Awareness program which were conducted majorly in Northeast and West India wherein personal protective equipment were distributed among waste pickers and vaccination program were conducted for waste handlers
Welfare and awareness campaign in collaboration with Sarthak Welfare Society	Thousands of waste pickers and associated families were being aware though this drive throughout the year which helped in improving quality of work in plastic waste management
My 10 Kg Plastic Campaign	Focuses on segregation of plastic waste at the source and bring behavioral change in consumers. This campaign was initially launched in Delhi NCR and now it is reaching different parts of the country organically such as Manipur.
Social Media Campaigns	Reached out to over 15,000 people through educational and awareness generating activities for taking up environmental conservation initiatives

Source: Company, Kotak Institutional Equities

**GCPL Products (GCPL)**

GCPL is among the few corporates that has set up sustainability packaging commitment to recycle and reuse recycled plastic waste as per the PWM rules. This company intends to achieve them by (1) judicious and innovative use of materials, including reuse and recycling as well as greater circularity (2) establishing a monitoring system to track and implement initiatives to reduce plastic packaging consumption and intensity and (3) exploring vendors and enterprises to increase the use of PCR plastic instead of virgin plastic in its operations.

- ▶ **3R approach to implement plastic waste management:** GCPL has been able to bring down its plastic packaging intensity by 17% since FY2020 by adopting the 3R (Reduce, Recycle and Replace) approach to sustainable packaging. Over 34% of its plastic packaging footprint (of 18,750 tons) used in FY2023 was recyclable. The company has reported the use of 3.5% PCR plastic in its packaging in FY2022. It has also committed to a list of sustainable packaging-related targets for reducing its packaging intensity and increasing the use of recycled plastic in the next few years (see Exhibit 74).

**GCPL has announced multiple sustainable packaging commitments to be achieved by FY2026**

**Exhibit 74: GCPL’s latest sustainable packaging commitments**

Maintain zero waste to landfill and achieve zero liquid discharge
Collect and recycle 100% of pre and post-consumer plastic
Minimum 50-microns thickness of plastic product labelling to include the thickness of plastic and extended producer responsibility (EPR) registration details
20% reduction in packaging intensity from FY2018 levels
80% of plastic used to be recyclable
Rigid plastics to be replaced by 30% recycled plastic by FY2026. Flexible plastics to be replaced by 10% recycled plastic by FY2027 and multi-layer plastics to be replaced by 5% recycled plastic by FY2027

Source: Company, Kotak Institutional Equities

- ▶ **LCA approach for improving sustainability:** GCPL has conducted Life Cycle Assessment of more than 50% of its products (with a plan to cover 80% by 2025) to assess where in the value chain can their products be more sustainable on all environmental fronts: energy, water, plastic and waste. This has helped it to make its packaging more sustainable and also build its reconstituted product portfolio of powder-to-liquid Magic handwash and bodywash (see Exhibit 75), which require 84% less plastic packaging and help build a more sustainable supply chain.

**GCPL has been able to reduce its plastic packaging requirement by light weighting and redesigning**

**Exhibit 75: Sustainable packaging related initiatives taken by the company**

Removed the handle and spout on the Ezee bottle, and reduced its weight thereby saving 120 tons p.a. of plastic material
Moved Genteel from a bottle design to a pouch and saved 32 tons p.a. of plastic material
Reduced the size of colorant and saved 56 tons p.a. of MLP material
For Goodknight Coils, the company completed trials using PCR plastic for Coil poly bags
Reconstituted product portfolio: It comprises of Magic handwash and Magic bodywash products which are in a powder to-liquid or liquid concentrate format. Reconstituted products require 84% less plastic packaging, further reducing waste and aiding in building a more sustainable supply chain.
The company converted the metalised cartons used for Goodknight Liquid Vapouriser refills to non-metalised cartons. Carton packaging for our Goodknight Liquid Vapouriser refills contributed to 3,500 tons of its category III plastic packaging. The initiative resulted in three-fold benefit- i) reduced plastic packaging consumption by 3500 tons; ii) Reduced EPR obligation by 3500 tons and iii) achieved significant cost savings over this project.

Source: Company, Kotak Institutional Equities

- ▶ **Innovation and redesigning the enabler:** The company has undertaken multiple initiatives for innovative use of materials, including reuse and recycling and greater circularity (see Exhibit 76). It is also working on finding and testing alternate packaging materials and increasing the use of post-consumer recycled plastic to move away from virgin plastic.

**GCPL's reconstituted products helped the company in lowering costs, saving water and reducing plastic**

**Exhibit 76:** Reconstituted products launched in the powder to liquid and body wash format



Source: Company, Kotak Institutional Equities

- ▶ **EPR:** GCPL not only collects back 100% of the plastic waste generated by it every year as per Indian EPR laws but goes beyond and works with civic agencies, social enterprises and citizens' groups to ensure that they work as partners to increase the reuse of material and recycle as much as possible. This has diverted over 541 MT of waste from landfills through clean-up drives.

**Hindustan Unilever (HUL)**

HUL is committed to create a waste free future by creating a circular economy. It has set-up several targets for managing plastic waste by 2025 and is redesigning its products and revising its business models based on 'Less plastic, Better plastic, No plastic' approach. In FY2023, it collected more plastic than it used for packaging its products and used ~73 % plastic packaging, which is recyclable. It is working on partnerships that can build supplier capacity and capability for PCR.

- ▶ **PWM targets in line with parent, but for use of recycled plastic:** HUL has well-articulated its 2025 goals for collecting, using recyclable packaging materials and using recycled plastics for packaging its products as a part of sustainability goals for migrating to a waste free world (see Exhibit 77). While, these targets are in broadly in line with the Unilever, we note that HUL's target to use 15% of recycled content currently trails behind the global goal of 25% (see Exhibit 78).

**HUL's plastic waste management targets are mainly focused on reuse and recyclability of packaging**

**Exhibit 77:** Plastic waste management-related targets set by HUL, March fiscal year end, 2023

Collect and process more plastic than we sell
100% reusable, recyclable or compostable plastic packaging by 2025
15% recycled plastic by 2025

Source: Company, Kotak Institutional Equities

**Unilever's 2025 plastic goals are focused on reduction, reuse and recyclability of plastic packaging**

**Exhibit 78:** Plastic goals set by Unilever

Reduce our virgin plastic footprint – by 30% by 2026, and 40% by 2028
100% of our plastic packaging to be reusable, recyclable or compostable – by 2030 (for rigids) and 2035 (for flexibles)
Collect and process more plastic packaging than we sell by 2025
25% recycled plastic in packaging (22% achieved till date)

Source: Company, Kotak Institutional Equities

- ▶ **Using recycled plastic remains focus area:** The company is increasing the use of recycled plastic. In FY2023, it had used 2.9% of recycled plastic (Unilever in CY2023: 22%) as post-consumer recycled plastic procured on a base of the total plastic footprint in the finished goods sold. It is using post-consumer recycled (PCR) plastic in the packaging for many of its brands such as Surf Excel, Comfort and Vim Dishwash Liquid.
- ▶ **Less plastic, better plastic, no plastic approach:** The company, in line with Unilever, has built a three-pronged framework to use less, better or no plastic for achieving its plastic goals:
  - **Less plastic:** Cutting down how much plastic it uses in the first place through lighter designs, reuse and refill formats, and concentrated products which use less packaging
  - **Better plastic:** Making sure the plastic it uses is designed to be recycled and that its products use recycled plastic
  - **No plastic:** Augmenting the reuse-refill revolution via using refill stations and formats to cut out new plastic completely and switching to alternative packaging materials such as paper, glass or aluminium

Several initiatives have been taken to implement the same (see Exhibit 79). We believe HUL will also gain from the learnings of the global parent while implementing various initiatives for collecting and processing plastics, finding new solution for flexible plastics and developing plastic free packaging & products (see Exhibit 80). Apart from the multiple initiatives taken by the company, it also acknowledges the plenty of technical challenges being faced in its better plastic journey. Unilever is developing new solutions, including chemical recycling for hardest-to-recycle plastics such as multi-layered and flexible packaging.

**HUL is implementing multiple initiatives to redesign its packaging**

**Exhibit 79: Packaging redesigning initiatives taken by the company**

Using 25% recycled HDPE in its personal care bottles like TRESemmé, Sunsilk, Vaseline lotions and Comfort fabric conditioner

Smart Fill Initiative- first refillable Lakmé Absolute Perfect Radiance Day Crème enable reuse of their old plastic packaging themselves

Eliminated the use of plastic overwraps from skincare brands like Pond’s white beauty and Glow & Lovely BB packs

Using 80% recycled PET in blister packs for Pepsodent toothbrushes and Vaseline lip care products

All its shampoo sachets and soap wrappers are recycle-ready material

Surf excel Matic Liquid uses 70% recycled plastic in packaging and Vim liquid bottles have 50% rPET

Source: Company, Kotak Institutional Equities

**Unilever has taken multiple product-specific initiatives in different geographies to reduce plastic waste**

**Exhibit 80: Other initiatives taken by the company to tackle the problem of plastic waste**

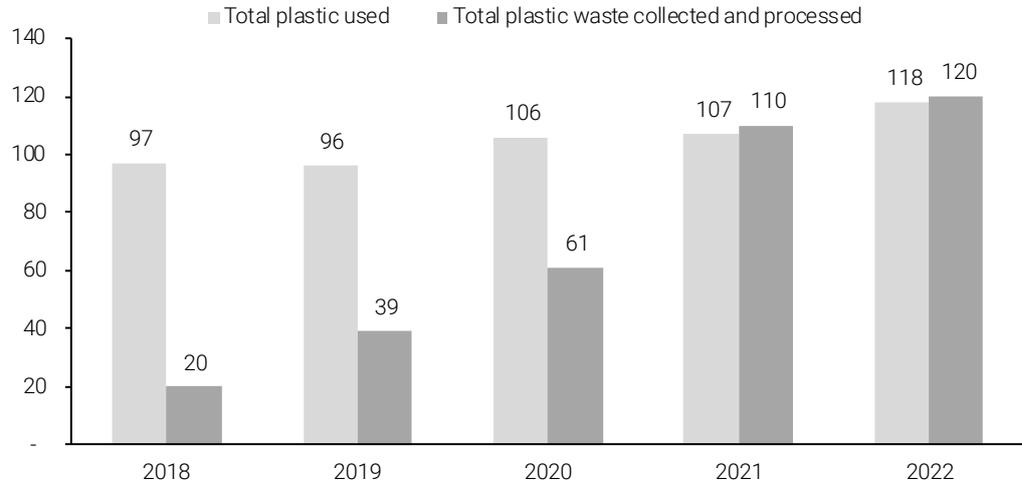
Collecting and processing plastic	Finding new solutions for flexible packaging	Plastic-free packaging and products
Its ‘Google My Business’ platform enables consumers to find their nearest waste banks via Google Maps in Indonesia	In the long-term, it wants to transition from using multi-layered sachets to technically recyclable mono-material sachets	Recyclable glass soup bottles from Knorr and paper ice cream tubs from Carte D’Or, Ben & Jerry’s and Wall’s
In China, it is using artificial intelligence to increase recycling rates	It has started a sachet recovery programme to incentivise its collection	
It is also working with partners in the UK and US to tackle the challenge of black plastic, which typically can’t be detected by waste sorting and recycling machines	In Vietnam, it launched a trial for recyclable mono-material sachets of CLEAR shampoo	
	It is working with Mars, Mondelez, Nestlé, PepsiCo and UK retailers to incentivise the recycling of flexible packaging	

Source: Company, Kotak Institutional Equities

- ▶ **EPR compliance:** The company is working with various PROs to execute its EPR plan. Its plastic waste collection network spans across 36 States and Union Territories of India. In the last two calendar years, the company had collected and processed more plastic waste than it used in its packaging (see Exhibit 81).

**HUL aims to create a waste free world by collecting more plastic waste than they use for their packaging**

**Exhibit 81:** Plastic used and plastic waste collected by HUL, Calendar year-ends, 2018-22 (ktons)



Source: Company, Kotak Institutional Equities

- ▶ **Behavioral change:** The company has also implemented a slew of initiatives to promote behavioral change to promote plastic recycling (see Exhibit 82).

**HUL has taken a holistic approach to plastic waste management by also promoting behavioral change**

**Exhibit 82:** Measures taken by HUL to promote behavioral change w.r.t. plastic waste management

**Partnership with Xynteo:** Working with United Nations Development Programme (UNDP) and Xynteo to change consumer behaviour of plastic segregation at source

**Project Utthaan:** Improve the lives of waste pickers (Safai Saathis) through project 'Utthaan' (Upliftment) in partnership with UNDP India via social protection schemes

**Bin boy campaign:** Launched the campaign that aims to inspire individuals to segregate household waste at source

Set up a Dry Waste Collection and Segregation Centre in partnership with SBI and MCGM in Mumbai

**Community biogas plant in Haridwar:** The plant has been using 200 kgs of waste per day for powering streetlights in Haridwar, saving 2.4 Kw energy per day, since February 2021. The project has further upcycled over 3,000 kgs of plastic waste to create handwashing stations.

**Prabhat:** A holistic waste management program wherein collected household waste is processed and brought back as value-added products. Collected plastic waste is processed and compressed to make plastic sheets for manufacturing handwashing stations and benches.

Source: Company, Kotak Institutional Equities

**ITC**

ITC has a diversified business portfolio ranging from hotels, paper packaging, cigarettes and other FMCG offerings. With low exposure to plastic packaging in hotels, paper packaging, cigarettes and agri business, which formed ~75% of its revenues in FY2023, the overall company level exposure to plastic packaging also remains low for ITC. The company is already plastic positive for the last two years and has recycled 99%+ of the waste collected. Most of its plastic packaging is recyclable. It is now focusing on innovation, redesigning its packaging, looking for alternatives to further reduce the intensity of virgin plastic used for packaging; however, is yet to announce the targets for using recycled plastic for packaging. We believe that ITC’s packaging division will benefit as consumer sector continues to migrate toward more sustainable packaging solutions.

- ▶ **Plastic neutral for last two years; significant waste recycled:** ITC achieved plastic neutrality in FY 2022 by implementing an integrated solid waste management program that incorporated the company’s flagship waste management initiative ‘ITC WOW – Well Being Out of Waste’. In FY2023, the company collected and sustainably managed more than 60,000 tons of plastic waste across 36 States and Union Territories. The company claims that it has been recycling more than 99% of the solid waste generated through its operations, including plastic waste for more than a decade.
- ▶ **Almost all plastic packaging recyclable:** ITC aims to have 100% reusable, recyclable or compostable/biodegradable plastic packaging by 2028. In FY2023, 99.9% of this has been achieved with phase out plans in place for the balance (see Exhibits 83-85). ITC is also actively working to increase the collection and recycling rates for Multi-Layered Plastic (MLP) packaging waste by implementing replicable, scalable and sustainable models of solid waste management.

**Aashirvaad iodized salt transitioned to 100% mono material PE laminate from multi layered PET/PE laminate in select variants**

Exhibit 83: Aashirvaad iodised salt packed in 100% mono material packaging



Source: Company, Kotak Institutional Equities

**ITC MasterChef Frozen Snacks transitioned to 100% mono material PE laminate from multi-layered PET/PE laminate in select variants**

Exhibit 84: ITC Master Chef Frozen Snacks packed in 100% mono material PE laminate



Source: Company, Kotak Institutional Equities

**Sunfeast Yippee! Noodles transitioned to 100% mono material PP laminate from multi layered laminates**

Exhibit 85: Sunfeast Yippee! Noodles packed in mono material PP laminate (outer pack and inner sachet)



Source: Company, Kotak Institutional Equities

- ▶ **Low exposure toward plastic packaging:** ITC mainly uses paper-based packaging for its large cigarettes’ portfolio. This reduces the overall exposure of plastic packaging that it has toward the consumer business. ITC’s annual packaging footprint from its FMCG businesses (excluding cigarettes business) across primary, secondary and tertiary packaging formats is around 210,000 tons and is primarily composed of paper/paperboard-based packaging (73%), followed by plastic packaging (27%). Glass, wood and metal form a small portion of the overall packaging footprint, contributing less than 1%. In terms of plastic packaging, around 88% is in the form of multi-layered/thin film plastic packaging and the balance is composed of PET and other rigid plastics.
- ▶ **Reducing intensity of virgin plastic usage for packaging:** ITC is working toward optimizing packaging in a way that reduces the environmental impact arising out of post-consumer packaging waste without affecting product integrity. This is being addressed by optimizing packaging design (see Exhibit 86), introducing recycled content in packaging (see Exhibit 87), identifying alternative packaging material with lower environmental impact (see Exhibit 88 and 89) and supporting development of suitable end-of-life solutions for packaging waste. ITC has been partnering with upstream players and suppliers for ensuring supply of recycled plastic for meeting regulatory/market demand for increasing recycled content in plastic packaging. 0.17% of its total plastic packaging used was recycled plastic in FY2023. The company has replaced items in the Government of India’s banned list such as disposable plastic cutlery (forks, spoons, knives) with wooden cutlery, and, plastic straws with paper straws.

**Savlon Pichkiao made with 22% less plastic compared to ordinary pump pack**

Exhibit 86: Savlon Pichkiao in a completely reusable and refillable pump-free format



Source: Company, Kotak Institutional Equities

**B Natural juices use 25% recycled content shrink wrap in secondary packaging**

Exhibit 87: Secondary packaging of B Natural Juices using recycled content



Source: Company, Kotak Institutional Equities

**1kg atta pack in a bag made from 55% paper compared to the earlier format of 100% plastic pack with PET/PE Laminate**

Exhibit 88: Aashirvaad organic atta in paper-based packaging



Source: Company, Kotak Institutional Equities

**Secondary packaging of Engage Cologne is 100% paper-based recyclable cartons after complete elimination of PET Film Layer**

Exhibit 89: Engage deo packed in paper-based cartons



Source: Company, Kotak Institutional Equities

- ▶ **Personal care portfolio witnessing early migration toward sustainable packaging solution:** Fiama, Vivel and Savlon have been frontrunners in adopting sustainable packaging for the soap portfolio. The Fiama and Vivel wrapped soap portfolio has also transitioned to recyclable mono material (see Exhibit 90) while Savlon soap wrappers now contain 70% recycled plastic in the PET film used (see Exhibit 91). Further, Fiama Shower Gel and Handwash bottles are now made with 50% Post-Consumer Recycled (PCR) material (see Exhibit 92). The company is also using recycled plastic in secondary packaging of personal care products.

**Vivel Ved Vidya soap moved to 100% recyclable packaging**

Exhibit 90: Vivel soap in recyclable packaging



Source: Company, Kotak Institutional Equities

**ITC Savlon is the first in its category to use recycled plastic**

Exhibit 91: PET Films of Savlon Glycerin Soap Wrapper using 70% Recycled Plastic Material



Source: Company, Kotak Institutional Equities

**Fiama portfolio has started using PCR in its shower gel and handwashes**

Exhibit 92: Fiama shower gel and handwash bottles made from 50% recycled plastic



Source: Company, Kotak Institutional Equities

- ▶ **Creating awareness among community:** The company has also announced initiatives to create awareness about waste segregation and promote plastic recycling. In FY2023, more than 3 mn school children were educated on plastic waste recycling with an initiative to collect plastic equivalent to 1 mn YiPPee! Noodles wrappers across 100+ cities. In Pune, ITC is supporting a circular economy, based on first-of-its-kind Multi-Layer Plastic (MLP) collection and recycling program. The company is also a signatory to the 'India Plastics Pact' (IPP).
- ▶ **Packaging business set to gain:** The transition to sustainable packaging is also an opportunity for the company's packaging business. It aims to capitalize on the same by leveraging its flagship 'InnovPack' campaign. Along with a steady pipeline of pioneering solutions anchored on molecular science research such as 'Bioseal', 'Oxyblock' and 'Germ free coating', the business has also pioneered several innovative solutions for 'Reducing, Reusing and Recycling' of plastic substrates, which are under various stages of commercialization (see Exhibit 93).

**ITC aims to capitalize upon the transition to sustainable packaging via its innovative packaging solutions**

Exhibit 93: Alternative/recyclable substitutes to plastic packaging offered by the company



Source: Company, Kotak Institutional Equities

**Jyothy Laboratories**

Jyothy Laboratories (Jyothy) is working toward net-zero plastic consumption by focusing on sustainable packaging, including reduced plastic usage, collecting more plastic, using less virgin and more recycled plastic and prioritizing ways to eliminate unnecessary plastic packaging through redesign and innovation amongst others. The company has set up a target of making entire packaging material made of reusable materials by 2032 and is already complying in collecting 100% of its target plastic waste as per action plan approved under the EPR.

- ▶ **EPR compliance:** The company is a registered brand owner under the EPR regime and is compliant with the action plan approved by CPCB for the FY2023 by collecting 100% of its target. The company aims to generate 'Zero Plastic' waste by 2027. This is being enabled through efforts around light-weighting, using ecofriendly alternatives such as biodegradable laminates, implementing best-in-class waste management practice and active engagement with certified partners for the coprocessing of waste.
- ▶ **Reducing plastic intensity:** Jyothy is focused on sustainable packaging, including reduced plastic usage. In FY2023, it successfully reduced the use of plastic in its Henko Matic (Penta Carton) packaging by 12.67%, in Maxo Liquid Vaporizer by 8.51%, in Maxo 12 Hour Coil by 7.57%, and in Exo Safai Steel by 1.06%. Additionally, it is mapping global trends, including tracking the work of the Ellen MacArthur Foundation, UNEP's Global Commitment, and the Foundation's Plastics Pact Network, which is working closely with over 1,000 organizations toward a circular economy for plastic by 2025.
- ▶ **Using recyclable packaging:** The company has committed to achieve 100% packaging material made of reusable materials by 2032 and adopt modern ways of achieving a circular economy for plastics. It has collaborated with partners to come up with innovative 100% reusable, recyclable or compostable packaging. The company aims to invest in advanced packaging research and development and facilitating the creation of recycling infrastructure to ensure that none of its packaging ends up in landfills, aquatic dumps or as litter in the environment.

**Marico**

Marico has high exposure to plastic for packaging for its products. At the same time, it is also at the forefront for embedding circularity in packaging portfolio. It is one of the founding members of the India Plastic Pact (IPP) and has aligned its strategy with the pact’s 2030 vision. It has already achieved plastic neutrality alongside using plastic packaging that is 94.5% is recyclable and less than 1% of it comprising PVC in FY2023. It has set-up targets to reduce 10% of the plastic intensity in packaging and increase the use of PCR to a minimum of 30% or as advised by the regulation by 2030 (2023: 0.58%) (see Exhibit 94).

- ▶ **Embedding circularity:** The company has implemented ‘Upcycle’ program for driving circularity within its overall packaging portfolio. It has established a set of nine opportunity levers to accomplish the 2030 goals (see Exhibit 95). The company’s R&D team is working on solutions to curtail the wastage of plastic, and transition to recyclable, reusable and compostable plastic packaging material (see Exhibit 96).

**Marico aims to extend its efforts beyond regulatory mandates to embed circularity in its packaging**

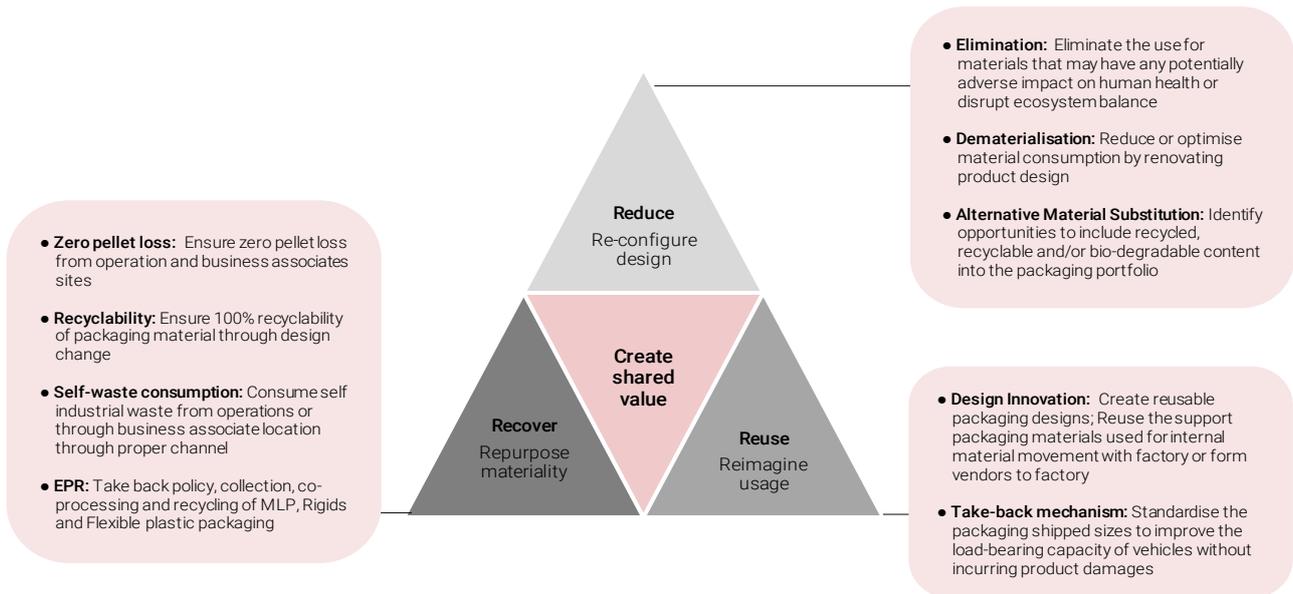
**Exhibit 94:** Marico’s plastic waste management targets and performance status

FY2025 targets	FY2023 status	FY2030 targets
Transition to 100% recyclable packaging	Recyclable packaging share : 94.5%	Retain 100% recyclable packaging portfolio
Have ‘Zero PVC’ use in packaging	PVC share < 1%	Reduce packaging material intensity by 10%
100% EPR compliance y-o-y	EPR compliance : 100%	100% EPR compliance y-o-y
	Use of PCR plastic : 2 successful projects with PCR usage in range of 10%-20%.	Increase the use of PCR minimum upto 30% or as advised by regulation

Source: Company, Kotak Institutional Equities

**Marico has identified nine opportunity levers under its Upcycle program to achieve its 2030 circularity in packaging related goals**

**Exhibit 95:** Opportunity levers for circularity in packaging for achieving company’s 2030 goals



Source: Company, Kotak Institutional Equities

**Marico’s R&D team has identified opportunity to reduce carbon footprint by using recycled PET and LDPE in hair oil packaging**

**Exhibit 96:** Recent packaging innovation done by Marico

Name of the product/service	Initiatives taken	Annual Potential
Value added hair oils	Reduce carbon footprint by dosing recycled PET with virgin-PET in few SKU’s of Value Added Hair Oils rigids	Virgin PET consumption reduction by 130 MT during FY2023
	Reduce carbon footprint by using recycled LDPE in place of virgin LDPE as secondary packaging for certain products of value added hair oils	Virgin LDPE consumption reduction by 23 MT during FY2023

Source: Company, Kotak Institutional Equities

- ▶ **Shifting toward recyclable plastics:** Marico aims to transition to a 100% recyclable packaging portfolio by 2025. It has achieved 94.5% recyclability by FY2023.
- ▶ **Using PCR, a priority:** Marico has started using recycled plastic for its products in primary and secondary packaging (see Exhibit 97). The company has completed two projects successfully with PCR usage in the range of 10-20%. Overall, recycled plastic share stands at 0.58% for FY2023. The company has also started using recycled material for bottles and for collation shrink films. In FY2022, the company also completed a collaborative circular packaging initiative with Dow and Lucro Plastecycle for reusing post-consumer recycled (PCR) shrink films for the brand Parachute.

**Marico has started using recycled plastic in its primary and secondary packaging**

**Exhibit 97:** Proportion of recycled or reused input material to total packaging material

Indicate input material	Recycled or reuse input material to total material	
	FY2023	FY2022
Recycled plastics (LDPE)	2.7% of LDPE	4.5% of LDPE
Recycled plastics (PET)	3% of PET	Less than 1% of PET (By volume)

Source: Company, Kotak Institutional Equities

- ▶ **Reducing intensity of plastic:** The company has also undertaken certain light weighting and redesigning measures for tackling its plastic waste. It claims to be using the lowest weight bottles against competition for Coconut Oil category. It reported 200 tons of reduction in plastic consumption in its rigid packaging in FY2022. It is also developing mono material packaging to ensure 100% recyclability and also worked on different technologies for Plastics Waste Management to reduce the environmental impact in association with industry bodies.
- ▶ **EPR:** Marico has partnered with authorized Waste Management Agencies for collection, recycling, co-processing, and safe disposal of pre & post-consumer waste. It is registered as a Producer and Brand Owner as per the PWM Rules. In FY2023, it had collected and safely disposed 18,584 MT (~3X of waste collected in FY2022) of post-consumer waste. The company has also appointed a competent external agency to monitor the timely achievement of its EPR targets, and to ensure that handling, recycling, disposing, and documentation processes of its waste management agencies (WMAs), are in line with government norms. In FY2023, Marico also conducted an independent third-party audit for selected waste management agencies to verify their adherence to the Plastic Waste Management rules. The company had recycled 72% of total post-consumer plastic waste collected under EPR in FY2022.

**Nestle India**

Nestle India has not announced any targets for its plastic waste management initiatives in India; however, it seems to follow the global targets set by the parent. It follows the reduce, recycle and recover approach for PWM. The company has remained plastic neutral since CY2020 and is supported by its global R&D capabilities to make plastic packaging for its products more sustainable.

- ▶ **Global goal of making packaging more sustainable by 2025:** Nestle follows an approach directed toward circular economy. The company is discovering and developing technologies for more sustainable packaging to meet global commitment for: (1) all Nestlé packaging to be recyclable or reusable by 2025 and (2) reduce use of virgin plastic by one third by 2025. Globally, Nestle has undertaken multiple initiatives to reduce its plastic packaging footprint, which has resulted in innovative packaging solutions for its iconic brands (see Exhibit 98). In India, the company is moving to replace hard-to-recycle MLP with monolayer laminate and has also been successful in reducing the intensity of plastic packaging by 8.6% (from baseline of 2018) in 2021.

**Nestle has come up with innovative solutions on a pilot basis in certain regions to reduce plastic packaging**

Exhibit 98: Plastic packaging reduction initiatives implemented by Nestle globally

<b>Making coffee pod recycling easier</b>	Nestlé brand Nespresso has launched a new paper-based capsule made using paper pulp with a biodegradable polymer that can be composted at home.
<b>Piloting the reusable packaging systems of the future</b>	It has partnered with Circulation, a German start-up to test the next generation of standardized reusable food packaging containers. It has enabled German consumers in select cities to enjoy Nesquik in standardized, reusable stainless-steel containers.
<b>Testing new solutions in refill to reduce Nestlé's plastic packaging</b>	In 2022, it tested a system with Siklus Indonesia where consumers order food and beverages including Nestlé Milo, Dancow, and Koko Krunch on an app and receive their products through a refill system via a bicycle service. In 2023, it launched a pilot refill vending machine service at retail partners' shops for Koko Krunch cereal and Milo in Indonesia.
<b>Substituting hard-to-recycle materials with paper</b>	Nestlé has introduced recyclable paper packaging for products including Maggi bouillon cubes, Nesquik, KitKat, Nescafé and others. It has switched to paper straws for Nesquik, Nescau, Milo and Nescafé.
<b>Creating a global market for food-grade recycled plastics</b>	Nestlé is investing up to CHF2 bn to accelerate the development of more sustainable packaging and the infrastructure to support a circular economy for packaging materials

Source: Company, Kotak Institutional Equities

- ▶ **3R approach:** The company is following the 3R principles to manage its plastic waste in the following manner:
  - **Reduce:** Packaging optimization by ensuring eco-designing of packaging in a sustainable way. The company launched Ready-to-Drink ('RTD') tetrapaks with paper straw replacing plastic straw. For the first time, recycled PET trays in the Chocolate category were launched in 2022 to reduce usage of virgin plastic.
  - **Recycle:** The company had recycled 4,911 tons of plastic packaging in 2022. It is also exploring packaging with recyclable-friendly structure, e.g., 100% recycled paper in shippers. Nestle India successfully expanded the mono-material laminate journey in flexible packaging for chocolates like Kitkat.
  - **Recover:** Under EPR, it has taken many initiatives to recover post-consumer waste by converting multilayered plastic waste to energy. A Gasolyser Pilot unit at Tahliwal has also been installed to convert the company's factory plastic waste to fuel.

- ▶ **Focus on R&D to make packaging sustainable:** Nestlé Institute of Packaging Science of Nestlé Group works alongside Nestlé R&D network while helping all Nestlé Group companies move toward paper packaging, increasing use of recycled, bio-degradable content in the packaging, simplifying on packaging, piloting refillable and reusable systems.
- ▶ **EPR:** The company claims that its brands have remained plastic neutral since 2020. It continues to engage with various waste management agencies for end-to-end management of plastic waste as part of Extended Producer Responsibility Initiative and has achieved an EPR of 23,300 tons through plastic waste management in CY2022.
- ▶ **Zero waste to landfills:** Nestle ensures that all generated waste in its factories is either reused, recycled or co-processed and none of the packaging ends up in landfill or as litter in the environment.
- ▶ **Integrated waste management project:** Nestle launched Project Hilldaari in 2019 to address the issue of plastic waste management in five tourist cities Mussoorie, Dalhousie, Ponda, Mahabaleshwar and Munnar. The project aims at achieving three outcomes: (1) diverting waste from landfill by creating awareness on waste segregation and anti-littering; (2) professionalizing waste workers to improve the ways of working getting recognized and leading a better life; and (3) enabling digital mechanism to manage waste in the city and having a system in place to manage waste workers.
- ▶ **Creating customer awareness:** It has taken a few initiatives for creating consumer awareness w.r.t. responsible plastic waste management. They had roped in the Indian actor Rajkumar Rao to highlight how MAGGI responsibly manages plastic equivalent to the number of packs that are sold, while urging consumers to spend 2-minutes to practice responsible disposal themselves. Nestle India also introduced a unique initiative, KITKAT 'Breaks for Good', under which KITKAT installed benches made from recycled plastic packaging across popular youth hangouts and colleges in India (see Exhibit 99).

#### **KITKAT installed benches made from recycled plastic across popular youth hangouts and colleges**

Exhibit 99: Benches made from recycled plastic



Source: Company, Kotak Institutional Equities

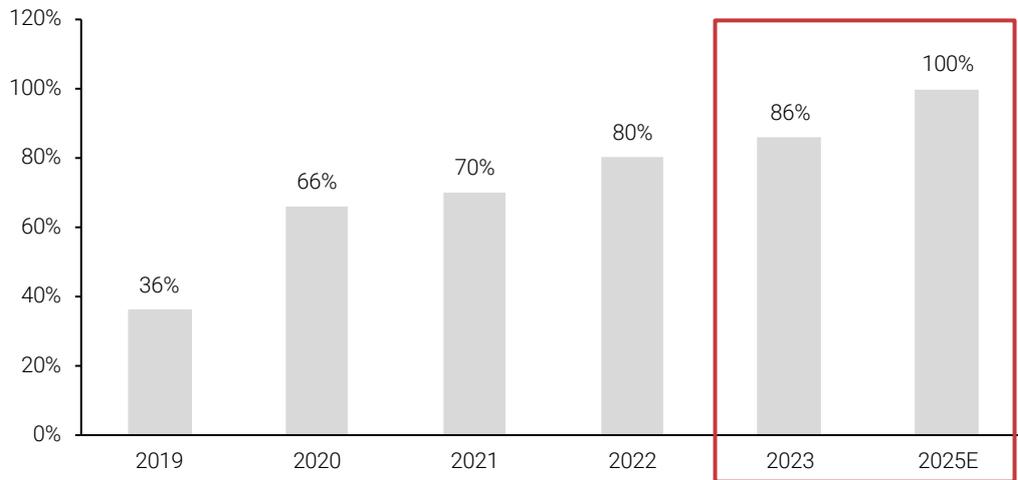
**Varun Beverages (VBL)**

VBL, following the rationalize and recycle approach, has remained significantly ahead of regulatory requirements on plastic waste management. The company has made significant progress on light weighting of pre-forms and closures in the last decade and recycled ~86% plastic waste generated in CY2023. The company intends to use ~30% of r-PET in its total plastic consumption by 2025. In CY2023, the company introduced 100% rPET bottles for Pepsi Black in specific sub-territories.

- ▶ **Twin approach to handle plastic waste:** VBL aims to tackle the problem of plastic waste in two ways: (1) weight reduction and (2) recycling of plastic waste.
- ▶ **Leads consumer staple industry in terms of recycling of waste:** On the recycling front, it has been advancing well ahead of the PWM rules by recycling its PET bottles in CY2023 (see Exhibit 100). It has set up a target to recycle 100% of its plastic waste by 2025. It has tied up with GEM Enviro for the phased implementation of 100% recycling of used PET bottles and has implemented various initiatives in this regard (see Exhibit 101). GEM Enviro is a PRO specializing in collection and recycling of packaging waste and promotion of recycled green products. It makes T-shirts and bags made from the recycling of waste material, such as used PET bottles.

**VBL has been advancing well ahead of EPR regulations in terms of amount of plastic waste being recycled**

**Exhibit 100:** Plastic waste recycled per kg of PET sold in finished products, Calendar year ends, 2019-25E (%)



Notes:

(1) Plastic waste includes PET, shrink film, plastic closures, labels and laminates post consumption.

Source: Company, Kotak Institutional Equities

**VBL has taken various initiatives to promote recycling and behavioral awareness toward the same**

**Exhibit 101: Recycling-related initiatives taken by the company**

Collection of waste: Collected waste directly from end-users by placing dustbins and reverse vending machines, and by way of direct collection from institutions (such as hotels, banquet halls and exhibitions)

Awareness on disposal of plastic waste: Conducted programs with 680+ participants across Nagar Nigam, sanitation staff, ragpickers and their families in Uttar Pradesh, Rajasthan and Haryana. A combination of welfare initiatives such as Swachhta Abhiyan, talks, slogan writing, display, and distribution of pet-recycled products and creative programs.

Launched Ragpickers Awareness Program: Launched the Ragpickers Awareness Program to improve the livelihoods of ragpickers. It provided a fair price to them for the waste collected and submitted by them. It also provided them with healthy working conditions.

Raised awareness on collection and proper disposal of plastic waste

Raised awareness on clean and green city

Installed bottle crushing machine

Conducted program on skill development

Distributed recycled merchandise (t-shirts, masks, safety kits, food items)

Source: Company, Kotak Institutional Equities

- **Reducing the intensity of plastic usage:** Packaging innovations introduced by Pepsico in India through global R&D and best practices have helped the company to reduce grammage of Plastic Closures and Preforms (used for PET Bottles) over the years. In CY2023, the company had achieved a weight reduction of 10-20% in packs of 600ml to 2.25L and 20-25% reduction in packs of CSD/Juices/Water over 2010 (see Exhibit 102).

**VBL has consistently reduced the grammage of its packaging over the years**

**Exhibit 102: Weight reduction of pre-forms and closures, Calendar year ends, 2010-2022 (grams)**

**Weight Reduction of Pre-forms:**

Pack size	2010-14	2015-19	2020-23	Net reduction (%)
600 ML	25.5	22.2	22.2	13%
750 ML	34.7	30.7	27.1	22%
1.0 L	21.0	21.0	19.0	10%
1.25 L	36.0	34.7	32.5	10%
2.25 L	52.5	50.7	47.0	11%

**Weight Reduction of Closures:**

Category	2010-14	2015-19	2020-23	Net reduction (%)
CSD/Juice	3.2	2.8	2.4	25%
Water	1.7	1.5	1.4	21%

Source: Company, Kotak Institutional Equities

- **Launched 100% rPET bottles in select categories; geared up for further uptake:** The company is focused on increasing the use of recycled PET in its PET bottle packs, emphasizing a shift toward more sustainable packaging materials. Its target is to achieve 30% usage of r-PET in its total plastic consumption. In FY2023, it introduced 100% recycled PET bottles for Pepsi Black in select sub-territories. It has already set up a 50:50 JV with Indo-Rama Group called IDVB Recycling Operations Private Limited to work on r-PET solutions for complying with impending regulations.
- **EPR compliance:** The company has partnered with GEM Enviro Management for the collection and phased implementation of 100% recycling of used PET bottles. Headquartered in Delhi, GEM Enviro is a Central Pollution Control Board (CPCB)-recognized Producer Responsible Organization (PRO) specializing in collection and recycling of packaging waste and promotion of recycled green products. It makes T-shirts and bags made from recycling of waste material, such as used PET bottles.

“Each of the analysts named below hereby certifies that, with respect to each subject company and its securities for which the analyst is responsible in this report, (1) all of the views expressed in this report accurately reflect his or her personal views about the subject companies and securities, and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this report: Sandeep Gupta, Prateeksha Malpani.”

## Ratings and other definitions/identifiers

### Definitions of ratings

**BUY.** We expect this stock to deliver more than 15% returns over the next 12 months.

**ADD.** We expect this stock to deliver 5-15% returns over the next 12 months.

**REDUCE.** We expect this stock to deliver -5+5% returns over the next 12 months.

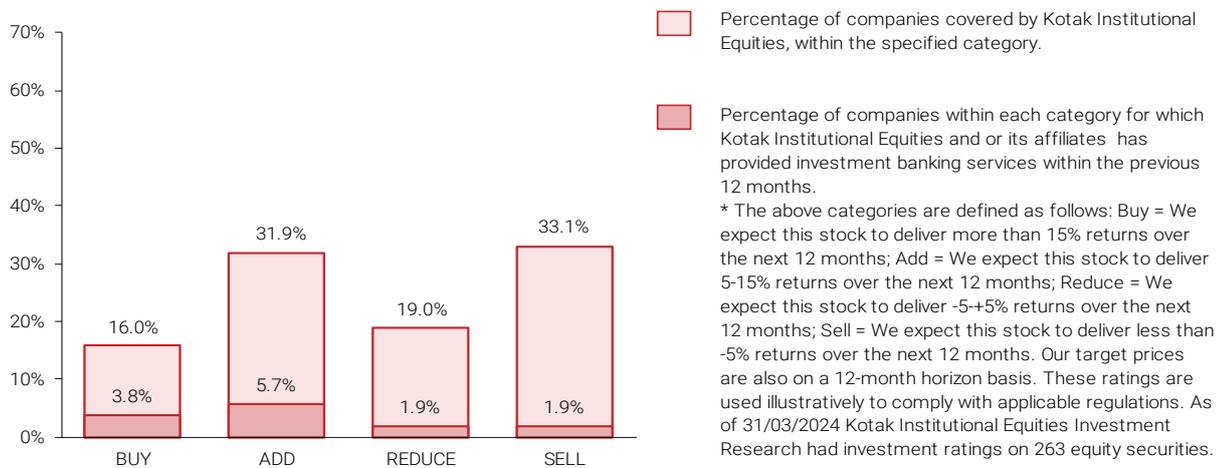
**SELL.** We expect this stock to deliver <-5% returns over the next 12 months.

Our Fair Value estimates are also on a 12-month horizon basis.

Our Ratings System does not take into account short-term volatility in stock prices related to movements in the market. Hence, a particular Rating may not strictly be in accordance with the Rating System at all times.

### Distribution of ratings/investment banking relationships

Kotak Institutional Equities Research coverage universe



Source: Kotak Institutional Equities

As of March 31, 2024

### Coverage view

The coverage view represents each analyst’s overall fundamental outlook on the Sector. The coverage view will consist of one of the following designations: **Attractive, Neutral, Cautious.**

### Other ratings/identifiers

**NR = Not Rated.** The investment rating and fair value, if any, have been suspended temporarily. Such suspension is in compliance with applicable regulation(s) and/or Kotak Securities policies in circumstances when Kotak Securities or its affiliates is acting in an advisory capacity in a merger or strategic transaction involving this company and in certain other circumstances.

**CS = Coverage Suspended.** Kotak Securities has suspended coverage of this company.

**NC = Not Covered.** Kotak Securities does not cover this company.

**RS = Rating Suspended.** Kotak Securities Research has suspended the investment rating and fair value, if any, for this stock, because there is not a sufficient fundamental basis for determining an investment rating or fair value. The previous investment rating and fair value, if any, are no longer in effect for this stock and should not be relied upon.

**NA = Not Available or Not Applicable.** The information is not available for display or is not applicable.

**NM = Not Meaningful.** The information is not meaningful and is therefore excluded.

## Corporate Office

Kotak Securities Ltd.  
27 BKC, Plot No. C-27, "G Block" Bandra Kurla  
Complex, Bandra (E) Mumbai 400 051, India  
Tel: +91-22-43360000

## Overseas Affiliates

Kotak Mahindra (UK) Ltd  
8th Floor, Portoken House  
155-157 Minorities, London EC3N 1LS  
Tel: +44-20-7977-6900

Kotak Mahindra Inc  
PENN 1,1 Pennsylvania Plaza,  
Suite 1720, New York, NY 10119, USA  
Tel: +1-212-600-8858

Copyright 2024 Kotak Institutional Equities (Kotak Securities Limited). All rights reserved.

The Kotak Institutional Equities research report is solely a product of Kotak Securities Limited and may be used for general information only. The legal entity preparing this research report is not registered as a broker-dealer in the United States and, therefore, is not subject to US rules regarding the preparation of research reports and/or the independence of research analysts.

- Note that the research analysts contributing to this report are residents outside the United States and are not associates, employees, registered or qualified as research analysts with FINRA or a US-regulated broker dealer; and
- Such research analysts may not be associated persons of Kotak Mahindra Inc. and therefore, may not be subject to FINRA Rule 2241 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst.
- Kotak Mahindra Inc. does not accept or receive any compensation of any kind directly from US institutional investors for the dissemination of the Kotak Securities Limited research reports. However, Kotak Securities Limited has entered into an agreement with Kotak Mahindra Inc. which includes payment for sourcing new major US institutional investors and service existing clients based out of the US.
- In the United States, this research report is available solely for distribution to major US institutional investors, as defined in Rule 15a – 6 under the Securities Exchange Act of 1934. This research report is distributed in the United States by Kotak Mahindra Inc., a US-registered broker and dealer and a member of FINRA. Kotak Mahindra Inc., a US-registered broker-dealer, accepts responsibility for this research report and its dissemination in the United States.
- This Kotak Securities Limited research report is not intended for any other persons in the United States. All major US institutional investors or persons outside the United States, having received this Kotak Securities Limited research report shall neither distribute the original nor a copy to any other person in the United States. Any US recipient of the research who wishes to effect a transaction in any security covered by the report should do so with or through Kotak Mahindra Inc. Please contact a US-registered representative; Vinay Goenka, Kotak Mahindra Inc., PENN 1,1 Pennsylvania Plaza, Suite 1720, New York, NY 10119, Direct +1 212 600 8858, vinay.goenka@kotak.com.
- This document does not constitute an offer of, or an invitation by or on behalf of Kotak Securities Limited or its affiliates or any other company to any person, to buy or sell any security. The information contained herein has been obtained from published information and other sources, which Kotak Securities Limited or its affiliates consider to be reliable. None of Kotak Securities Limited accepts any liability or responsibility whatsoever for the accuracy or completeness of any such information. All estimates, expressions of opinion and other subjective judgments contained herein are made as of the date of this document. Emerging securities markets may be subject to risks significantly higher than more established markets. In particular, the political and economic environment, company practices and market prices and volumes may be subject to significant variations. The ability to assess such risks may also be limited due to significantly lower information quantity and quality. By accepting this document, you agree to be bound by all the foregoing provisions.

This report is distributed in Singapore by Kotak Mahindra (UK) Limited (Singapore Branch) to institutional investors, accredited investors or expert investors only as defined under the Securities and Futures Act. Recipients of this analysis/report are to contact Kotak Mahindra (UK) Limited (Singapore Branch) (16 Raffles Quay, #35-02/03, Hong Leong Building, Singapore 048581) in respect of any matters arising from, or in connection with, this analysis/report. Kotak Mahindra (UK) Limited (Singapore Branch) is regulated by the Monetary Authority of Singapore.

Kotak Securities Limited and its affiliates are a full-service, integrated investment banking, investment management, brokerage and financing group. We along with our affiliates are leading underwriter of securities and participants in virtually all securities trading markets in India. We and our affiliates have investment banking and other business relationships with a significant percentage of the companies covered by our Investment Research Department. Our research professionals provide important input into our investment banking and other business selection processes. Investors should assume that Kotak Securities Limited and/or its affiliates are seeking or will seek investment banking or other business from the company or companies that are the subject of this material. Our research professionals are paid in part based on the profitability of Kotak Securities Limited, which includes earnings from investment banking and other businesses. Kotak Securities Limited generally prohibits its analysts, persons reporting to analysts, and members of their households from maintaining a financial interest in the securities or derivatives of any companies that the analysts cover. Additionally, Kotak Securities Limited generally prohibits its analysts and persons reporting to analysts from serving as an officer, director, or advisory board member of any companies that the analysts cover. Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients that reflect opinions that are contrary to the opinions expressed herein, and our proprietary trading and investing businesses may make investment decisions that are inconsistent with the recommendations expressed herein.

In reviewing these materials, you should be aware that any or all of the foregoing, among other things, may give rise to real or potential conflicts of interest. Additionally, other important information regarding our relationships with the company or companies that are the subject of this material is provided herein.

This material should not be construed as an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. We are not soliciting any action based on this material. It is for the general information of clients of Kotak Securities Limited. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Before acting on any advice or recommendation in this material, clients should consider whether it is suitable for their particular circumstances and, if necessary, seek professional advice. The price and value of the investments referred to in this material and the income from them may go down as well as up, and investors may realize losses on any investments. Past performance is not a guide for future performance, future returns are not guaranteed and a loss of original capital may occur. Kotak Securities Limited does not provide tax advice to its clients, and all investors are strongly advised to consult with their tax advisers regarding any potential investment. Certain transactions – including those involving futures, options, and other derivatives as well as non-investment-grade securities – give rise to substantial risk and are not suitable for all investors. The material is based on information that we consider reliable, but we do not represent that it is accurate or complete, and it should not be relied on as such. Opinions expressed are our current opinions as of the date appearing on this material only. We endeavor to update on a reasonable basis the information discussed in this material, but regulatory, compliance, or other reasons may prevent us from doing so. We and our affiliates, officers, directors, and employees, including persons involved in the preparation or issuance of this material, may from time to time have "long" or "short" positions in, act as principal in, and buy or sell the securities or derivatives thereof of companies mentioned herein. Kotak Securities Limited and its non-US affiliates may, to the extent permissible under applicable laws, have acted on or used this research to the extent that it relates to non-US issuers, prior to or immediately following its publication. Foreign currency-denominated securities are subject to fluctuations in exchange rates that could have an adverse effect on the value or price of or income derived from the investment. In addition, investors in securities such as ADRs, the value of which are influenced by foreign currencies, affectively assume currency risk. In addition, options involve risks and are not suitable for all investors. Please ensure that you have read and understood the current derivatives risk disclosure document before entering into any derivative transactions.

Kotak Securities Limited established in 1994, is a subsidiary of Kotak Mahindra Bank Limited.

Kotak Securities Limited is a corporate trading and clearing member of BSE Limited (BSE), National Stock Exchange of India Limited (NSE), Metropolitan Stock Exchange of India Limited (MSE), National Commodity and Derivatives Exchange (NCDEX) and Multi Commodity Exchange (MCX). Our businesses include stock broking, services rendered in connection with distribution of primary market issues and financial products like mutual funds and fixed deposits, depository services and portfolio management.

Kotak Securities Limited is also a Depository Participant with National Securities Depository Limited (NSDL) and Central Depository Services (India) Limited (CDSL). Kotak Securities Limited is also registered with Insurance Regulatory and Development Authority and having composite license acts as Corporate Agent of Kotak Mahindra Life Insurance Company Limited and Kotak Mahindra General Insurance Company Limited and is also a Mutual Fund Advisor registered with Association of Mutual Funds in India (AMFI). Kotak Securities Limited is registered as a Research Analyst under SEBI (Research Analyst) Regulations, 2014.

We hereby declare that our activities were neither suspended nor have we defaulted with any stock exchange authority with whom we are registered in last five years. However, SEBI, Exchanges and Depositories have conducted the routine inspection and based on their observations have issued advise letters or levied minor penalty on KSL for certain operational deviations. We have not been debarred from doing business by any stock exchange/SEBI or any other authorities, nor has our certificate of registration been cancelled by SEBI at any point of time.

We offer our research services to primarily institutional investors and their employees, directors, fund managers, advisors who are registered with us. Details of Associates are available on website, i.e. [www.kotak.com](http://www.kotak.com) and <https://www.kotak.com/en/investor-relations/governance/subsidiaries.html>.

Research Analyst has served as an officer, director or employee of subject company(ies): No.

We or our associates may have received compensation from the subject company(ies) in the past 12 months.

We or our associates have managed or co-managed public offering of securities for the subject company(ies) or acted as a market maker in the financial instruments of the subject company/company (ies) discussed herein in the past 12 months. YES. Visit our website for more details <https://kie.kotak.com>.

We or our associates may have received compensation for investment banking or merchant banking or brokerage services from the subject company(ies) in the past 12 months. We or our associates may have received any compensation for products or services other than investment banking or merchant banking or brokerage services from the subject company(ies) in the past 12 months. We or our associates may have received compensation or other benefits from the subject company(ies) or third party in connection with the research report.

Our associates may have financial interest in the subject company(ies).

Research Analyst or his/her relative's financial interest in the subject company(ies): No.

Kotak Securities Limited has financial interest in the subject company(ies) at the end of the week immediately preceding the date of publication of Research Report: YES. Nature of Financial interest: Holding equity shares or derivatives of the subject company.

Our associates may have actual/beneficial ownership of 1% or more securities of the subject company(ies) at the end of the month immediately preceding the date of publication of Research Report.

Research Analyst or his/her relatives have actual/beneficial ownership of 1% or more securities of the subject company(ies) at the end of the month immediately preceding the date of publication of Research Report: No.

Kotak Securities Limited has actual/beneficial ownership of 1% or more securities of the subject company(ies) at the end of the month immediately preceding the date of publication of Research Report: No.

Subject company(ies) may have been client during twelve months preceding the date of distribution of the research report.

A graph of daily closing prices of securities is available at <https://www.moneycontrol.com/india/stockpricequote/> and <http://economictimes.indiatimes.com/markets/stocks/stock-quotes>. (Choose a company from the list on the browser and select the "three years" icon in the price chart).

First Cut notes published on this site are for information purposes only. They represent early notations and responses by analysts to recent events. Data in the notes may not have been verified by us and investors should not act upon any data or views in these notes. Most First Cut notes, but not necessarily all, will be followed by final research reports on the subject.

There could be variance between the First Cut note and the final research note on any subject, in which case the contents of the final research note would prevail. We accept no liability of the First Cut Notes.

### Analyst Certification

The analyst(s) authoring this research report hereby certifies that the views expressed in this research report accurately reflect such research analyst's personal views about the subject securities and issuers and that no part of his or her compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in the research report.

This report or any portion hereof may not be reprinted, sold or redistributed without the written consent of Firm. Firm Research is disseminated and available primarily electronically, and, in some cases, in printed form.

Additional information on recommended securities is available on request.

Our research should not be considered as an advertisement or advice, professional or otherwise. The investor is requested to take into consideration all the risk factors including their financial condition, suitability to risk return profile and the like and take professional advice before investing.

Investments in securities market are subject to market risks. Read all the related documents carefully before investing.

Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors.

Derivatives are a sophisticated investment device. The investor is requested to take into consideration all the risk factors before actually trading in derivative contracts. Compliance Officer Details: Mr. Hiren Thakkar. Call: 022 - 4285 8484, or Email: [ks.compliance@kotak.com](mailto:ks.compliance@kotak.com).

Kotak Securities Limited. Registered Office: 27 BKC, C 27, G Block, Bandra Kurla Complex, Bandra (E), Mumbai 400051. CIN: U99999MH1994PLC134051, Telephone No.: +22 43360000, Fax No.: +22 67132430. Website: [www.kotak.com](http://www.kotak.com) / [www.kotaksecurities.com](http://www.kotaksecurities.com). Correspondence Address: Infinity IT Park, Bldg. No 21, Opp. Film City Road, A K Vaidya Marg, Malad (East), Mumbai 400097. Telephone No: 42856825. SEBI Registration No: INZ000200137/(Member of NSE, BSE, MSE, MCX & NCDEX), AMFI ARN 0164, PMS INP000000258 and Research Analyst INH000000586. NSDL/CDSL: IN-DP-629-2021. Compliance Officer Details: Mr. Hiren Thakkar. Call: 022 - 4285 8484, or Email: [ks.compliance@kotak.com](mailto:ks.compliance@kotak.com)

Details of	Contact Person	Address	Contact No.	Email ID
Customer Care/ Complaints	Mr. Ritesh Shah	Kotak Towers, 8th Floor, Building No.21, Infinity Park, Off Western Express Highway, Malad (East), Mumbai, Maharashtra - 400097	18002099393	<a href="mailto:ks.escalation@kotak.com">ks.escalation@kotak.com</a>
Head of Customer Care	Mr. Tabrez Anwar		022-42858208	<a href="mailto:ks.servicehead@kotak.com">ks.servicehead@kotak.com</a>
Compliance Officer	Mr. Hiren Thakkar		022-42858484	<a href="mailto:ks.compliance@kotak.com">ks.compliance@kotak.com</a>
CEO	Mr. Shripal Shah		022-42858301	<a href="mailto:ceo.ks@kotak.com">ceo.ks@kotak.com</a>

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. Kindly refer <https://www.kotaksecurities.com/contact-us/>.