BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

ORIGINAL APPLICATION NO. 22 OF 2022

IN THE MATTER OF:

A. KRISHNA & ORS ...APPLICANTS

VERSUS

UNION OF INDIA & ORS. ...RESPONDENTS

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PLACE: Delhi

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

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REPLY ON BEHALF OF RESPONDENT NO. 12

MOST RESPECTFULLY SHOWETH:

1. The instant Reply is being filed on behalf of the Respondent No. 12 to the Original Application. The instant Reply is being signed, verified and filed by Mr. Sharad Chandra Sharma engaged as the Head of Legal Affairs of the Respondent No.12 Company being duly authorized *vide* Power of Attorney dated 01.02.2022 which has been resolved by the Directors of the Respondent No.12 Company *vide* Board Resolution dated 03.02.2022. The copy of the Power of Attorney dated 01.02.2022 has been annexed herewith and marked as **"Annexure R12/1".** The copy of the Board Resolution dated 03.02.2022 has been annexed herewith and marked as **"Annexure R12/2".**

2. It is respectfully submitted that the instant Reply is being filed on behalf of the Respondent No.12 Company to place on record relevant facts and circumstances relating to the captioned case pursuant to the directions issued by this Hon'ble Tribunal which have been deliberately concealed and misconceived by the Applicants herein, for their own ulterior gains and motives.

3. At the outset, it is submitted that the Respondent No.12 Company hereby denies all the allegations imputed, contentions raised and averments made against the Respondent No.12 Company by the Applicants ad seriatim as though traversed, save and except as are a matter of record and/or have been specifically admitted by the Respondent No.12 Company, hereinafter. It is further submitted that the captioned Application is wholly conjectural, misconceived, misconstrued, false, frivolous, baseless, bad in law and devoid of merits and is liable to be dismissed with costs in favour of the Respondent No.12 Company.

4. Furthermore, at this juncture, it is stated that the Respondent No. 12 verily believes that the instant Application is motivated and is at the behest of rival alternate packaging industry interests. It is stated that aseptic carton packaging of the

Respondent No. 12, which the Applicants desire to ban, has become the packaging of choice for many consumers of beverages, in part because aseptic carton packaging is tamper-evident. In fact, the aseptic carton packaging of the Respondent No. 12 is used in certain States for the sale of liquor, as adulterated or spurious alcoholic beverages in glass bottles have posed a mortal danger to thousands of people over the years. The consumers have thus begun to exert a strong preference for aseptic carton packaging for reasons related to safety, among other features and benefits relating to sustainability and convenience. Also, the Expert Committee constituted by the Principal Bench of the NGT (in the Original Application No. 15/2014) specifically cited the advantageous lower-plastic footprint of paper-based carton packaging as follows:

> *"(4)...Existing packaging systems of paper-based cartons with minimal plastics as coatings, composite and reusable containers made up of glass, tin, metal and paper maybe promoted as replacements."*

5. In brief, the aseptic carton industry stands proudly with Indian consumers, who are free to make personal choices in the marketplace, and with objective scientific authorities the Indian government entrusts with protecting the public, including the NGT's Expert Committee. However, the Applicants have sought to further improper motives by filing the instant Application purely to restrict competition and consumer choice and thus to deny the Indian public the benefits of paper-based packaging.

I. PRELIMINARY OBJECTIONS

A. LACK OF JURISDICTION

6. It is most respectfully submitted that this Hon'ble Tribunal lacks the appropriate territorial jurisdiction to try and entertain the captioned Application, since no part of the cause of action qua the Respondent No. 12 has arisen within the territorial limits of this Hon'ble Tribunal.

7. It is pertinent to submit that the Government of India, in accordance with the powers granted under Section 4(3) of the National Green Tribunal Act, 2010 had issued a notification dated 17.08.2011 whereby different benches of the Hon'ble National Green Tribunal with territorial jurisdiction to

entertain and hear matters / issues pertaining solely to and arising within the territorial jurisdiction over which such a bench of the Hon'ble National Green Tribunal is vested with jurisdiction.

8. It is stated that in terms of the aforementioned Notification, as amended from time to time, the Southern Zone Bench of the Hon'ble National Green Tribunal, with its seat at Chennai, has been vested with territorial jurisdiction over the States of Kerala, Tamil Nadu, Andhra Pradesh and/or Karnataka.

9. At this juncture it is stated that the Respondent No.12 Company has no manufacturing plant located within the States of Kerala, Tamil Nadu, Andhra Pradesh and/or Karnataka, primarily the States over which this Hon'ble Tribunal has the appropriate jurisdiction. Needless to mention that the Respondent No.12 Company has no production operations in the aforementioned States as well.

10. It is stated that the Respondent No. 12 has one plant in India at Chakan, Maharashtra and for reasons thereof, for any and all compliances under the Environment Protection Act, 1986 and rules/regulations framed thereunder, the Respondent No. 12 is

subject to the jurisdiction of the Maharashtra Pollution Control Board.

11. In view of the aforesaid, it is respectfully submitted that this Hon'ble Tribunal lacks the territorial jurisdiction to entertain the captioned Application qua the Respondent No. 12.

B. FORUM SHOPPING AND APPROACHING THIS HON'BLE TRIBUNAL WITH UNCLEAN HANDS

12. It is hereby submitted that there has been a grave suppression of material facts by the Applicants in the captioned application before this Hon'ble Tribunal. The Applicant No. 2 has deliberately indulged in the practice of forum shopping by filing similar applications concerning the same alleged issues before different courts and tribunals.

13. It is submitted that the captioned Application is a gross abuse of due process of law and is in violation of the basic Principles of Natural Justice. The Applicant No. 2 has been forum shopping with *mala fide* intentions and ulterior motives against the Respondent No.12 Company.

14. It is pertinent to state that as also mentioned in the instant Application filed by the Applicants, the Applicant No.2 has filed

a series of litigations before this Hon'ble Tribunal but the same is concerning similar issues regarding implementation of the ban on plastics. It is thereby, evident, that since, the Applicant No.2 was not successful in the previously made attempts, the Applicant No.2 has made another attempt by filing the captioned application on the similar issue to achieve the same goal.

15. It is submitted that the same allegations *qua* the instant application under Reply are being made over and over again before this Hon'ble Tribunal and other Hon'ble Benches of the National Green Tribunal, and also in different forms with superficial differences, to mislead and confuse the judicial authorities into entertaining the Applicant's proceedings as new proceedings, whereby it is verily believed that the Applicant had the prior knowledge of the pending litigations *qua* similar nature at the time of filing the instant application which indicates at the fact that the instant application is pre-meditated and motivated by unwarranted factors.

16. It is pertinent to submit that a similar litigation has also been filed against the Respondent No.12 Company on a similar subject matter regarding the restriction and use of multi-

layered or plastic packaging, before the National Green Tribunal, Principal Bench, New Delhi in case bearing O.A. No.15/2014 which was decided *vide* order dated 08.01.2021. The aforementioned judgment was later challenged before the Hon'ble Supreme Court of India which was registered bearing C.A. No. 2314/2021 which is pending adjudication. A copy of judgement dated 08.01.2021 in case bearing O.A. No. 15/2014 is being annexed herewith and marked as **"Annexure R12/3".**

17. From the aforementioned, it is humbly submitted that if such manipulative, motivated and habitual litigants are granted any indulgence by this Hon'ble Tribunal, then it shall lead to the wastage of the valuable time of this Hon'ble Tribunal. At this juncture, reliance can be placed upon the observation made by the Hon'ble Supreme Court in the case titled *"Dr Budhi Kota Subbarao versus K. Parasaran and Ors., AIR 1996 SC 2687*; wherein it was *inter-alia* held that:

> *"No litigant has a right to unlimited drought on the Court time and public money in order to get his affairs settled in the manner he wishes. However, access to justice should not be misused as a license to file misconceived and frivolous petitions."*

18. In light of the aforementioned pending litigation before the Hon'ble Supreme Court, the Respondent No.12 Company places reliance upon one of the recent judgments delivered by the Hon'ble Supreme Court in the case titled *"Vijay Kumar Ghai & Ors. versus State of West Bengal and Ors., 2022 SCC OnLine SC 344";* wherein the Hon'ble Supreme Court *inter-alia* reiterated the *Principle of Forum Shopping*:

> *"33. Predominantly, the Indian Judiciary has time and again reiterated that forum shopping takes several hues and shades but the concept of 'forum shopping' has not been rendered an exclusive definition in any Indian statute. Forum shopping as per Merriam Webster dictionary is: —*
>
> *"The practice of choosing the court in which to bring an action from among those courts that could properly exercise jurisdiction based on determination of which court is likely to provide the most favourable outcome."*
>
> *34. The Indian judiciary's observation and obiter dicta has aided in streamlining the concept of*

forum shopping in the Indian legal system. This Court has condemned the practice of forum shopping by litigants and termed it as an abuse of law and also deciphered different categories of forum shopping."

19. In the aforesaid judgment of the Hon'ble Supreme Court, emphasis was also supplied on the observations made by the Hon'ble Supreme Court in the two-judge bench judgment delivered by the Hon'ble Supreme Court in the case titled *"Union of India versus Cipla Ltd., (2017) 5 SCC 262;* wherein the Court *inter-alia* laid down the test to be applied and the factors which lead to the practice of forum shopping or choice of forum by the litigants which are as follows:

"155. The decisions referred to clearly lay down the principle that the court is required to adopt a functional test vis-à-vis the litigation and the litigant. What has to be seen is whether there is any functional similarity in the proceedings between one court and another or whether there is some sort of subterfuge on the part of a litigant. It is this

functional test that will determine whether a litigant is forum shopping or not."

20. Thus, it is stated that the subject matter of the instant Application and the issues agitated herein are already subject matters of several other proceedings. Needless to state, the instant Application is merely re-agitation of issues and it is, therefore, most respectfully submitted that the captioned Application merits to be dismissed on this short ground alone for concealment of the aforementioned facts and approaching this Hon'ble Tribunal with unclean hands.

C. NO CAUSE OF ACTION *QUA* THE RESPONDENT NO. 12

21. It is hereby submitted that the Applicants have not mentioned any cause of action to institute the captioned Original Application *qua* the Respondent No.12 Company and further, the allegations imputed against the Respondent No.12 Company are uncorroborated, unsubstantiated and lack even an iota of evidentiary value before the eyes of law.

22. It is submitted that the only alleged allegation against the Respondent No.12 Company is that the Respondent No.12 Company is manufacturing large amounts of multi-layered

cartons which are completely non-recyclable and harmful to the environment and in violation to Rule 9(3) of the Plastic Waste Management Rules, 2016 which is *prima facie* false, incorrect, baseless and liable to be rejected for being unsubstantiated, uncorroborated and bald averment.

23. It is further submitted that the Applicants have wrongfully submitted that the cause of action is continuing in the captioned case. In fact, it is pertinent to submit that the Applicants have failed to place on record even a single cause of action which is against the Respondent No.12 Company.

24. It is hereby submitted that the Hon'ble National Green Tribunal, Principal Bench, New Delhi, on 08.01.2021 settled and disposed of the issue regarding the compliance of the Plastic Waste Management Rules, 2016 including the concept of Extended Producer Responsibility (EPR) by the Central Pollution Control Board (CPCB) and various State Pollution Control Boards (SPCB) which was dealt with in the Execution Application No.13/2019 in O.A. No. 247/2017, *Central Pollution Control Board versus State of Andaman & Nicobar & Ors.;* alongwith O.A. No. 997/2019, *Aditya Dubey (Minor) versus Amazon Retail India Private Limited & Ors.,* O.A. No. 28/2020, *Aditya Dubey (Minor)*

through his legal Guardian Mrs. Anu Dubey & Anr. Versus Coca-Cola India Pvt. Ltd. (CCIPL) & Ors., O.A. No. 29/2020, *Avani Mishra versus Union of India & Ors. and* O.A. No. 42/2020, *Shubham Khatri versus Union of India & Ors.;* whereby the Ministry of Environment, Forests and Climate Change (MoEFCC) was directed to finalize the regime of Extended Producer Responsibility (EPR) at the earliest.

25. It is pertinent to submit that in view of the aforementioned order, the Ministry of Environment, Forests and Climate Change (MoEFCC) *vide* notification dated 16.02.2022 issued the guidelines and relating to Extended Producer Responsibility of the Producer, Importer and Brand Owner as per which the targets and obligations for each category of plastic packaging have been laid down including the obligation for recycling by the producer, imported and brand owner engaged in plastic packaging which is also the main concern and subject matter maliciously raised by the Applicants in the captioned Application before this Hon'ble Tribunal.

26. It is hereby stated that in view of the aforementioned guidelines on Extended Producer Responsibility which were stipulated by the notification dated 16.02.2022 and also otherwise, there

exists no cause of action against the Respondent No.12 Company and accordingly, the captioned Application merits to be dismissed qua the Respondent No. 12 on this short ground alone.

D. THE APPLICANTS DO NOT HAVE THE LOCI STANDI TO FILE THE INSTANT APPLICATION

27. It is hereby submitted that the Applicants have no *loci standi* to file the captioned Application before this Hon'ble Tribunal in terms of Section 18(2) of the National Green Tribunal Act, 2010.

28. To the extent the Applicants might have presented themselves as a legitimate and *bona fide* environmentally concerned NGO and sought to assert putative standing on this basis, they have obliterated any remote validity of such a pretense by permitting themselves to become an instrument of a *mala fide* campaign of litigation with utterly no intent to further the public good but rather designed only to restrict competition and deny consumer choice.

E. MIS-STATEMENT OF FACTS AND MISLEADING AND FALSE PLEADINGS

29. It is pertinent to submit the Applicant has deliberately placed on record misleading facts and information. The Applicant has submitted conjectural and misleading data in the present Application alleging that only 3% of the Respondent No.12 Company's used paper-based carton packages are recycled in India. However, as detailed in the subsequent paragraphs, the Applicant's basis of computation of total production quantity of paper-based cartons by the Respondent No.12 Company is deliberately misleading and factually incorrect.

30. During the financial year 2019-20, the total paper-based packaging material produced and supplied by the Respondent No.12 Company to the Brand Owners or manufacturers in India is 77,003 MT instead of 2,25,360 MT as has been falsely mentioned and misrepresented by the Applicant in the captioned Application. Needless to state, the allegations and false averments of the Applicants are without any *iota* of evidence, lacks credence and reliability. Further, the recycling rate for the paper-based carton packages in India is more than 40% instead of 3%. It is stated that the subsequent paragraphs of Preliminary Submissions be read in Reply.

31. It is stated that the pleadings qua the Respondent No. 12 are incorrect, false and purely conjectural. The Applicants have arrayed the Respondent No. 12 for ulterior motives premised on baseless allegations. It is stated that the Applicants are not entitled to any relief qua the Respondent No. 12.

II. PRELIMINARY SUBMISSIONS

32. The instant Application has been preferred by the Applicants *inter alia*, seeking the following relief:

> *"(i) Direct the respondents to implement Clause 9(3) of the Plastic Waste Management Rules, 2016 (as amended in 2018) accordingly phase out multi-layered plastic since they are non – recyclable, not energy recoverable and do not have an alternate use;*
>
> *(ii) Direct the respondents to take action for non – compliance with Rule 9(3) of the Plastic Waste Management Rules, 2016 (as amended in 2018);"*

33. In this regard and this juncture, it is essential to refer to the pertinent provisions of the Plastic Waste Management Rules, 2016 (as amended in 2018) as under:

33.1. Clause 9(3) of the Plastic Waste Management Rules, 2016 (as amended in 2018) is as under:

> *"(3) Manufacture and use of multi – layered plastic which is non – recyclable or non – energy recoverable or with no alternate use of plastic if any should be phased out in Two years' time;"*

33.2. Clause 3(o) of the Plastic Waste Management Rules, 2016 (as amended in 2018) defines "multi – layered packaging" as under:

> *"(o) "multi – layered packaging" means any material used or to be used for packaging and having at least one layer of plastic as the main ingredient in combination with one or more layer of materials such as paper, paper board polymeric materials, metalized layers*

or aluminum foil, either in the form of a laminate or co-extruded structure."

33.3. Clause 3(ab) of the Plastic Waste Management Rules, 2016 (as amended in 2018) defines "alternate use" as under:

"(ab) "alternate use" means use of material for a purpose other than for which it was conceived, which is beneficial because it promotes resource efficiency"

33.4. Clause 3(ga) of the Plastic Waste Management Rules, 2016 (as amended in 2018) defines "energy recovery" as under:

"(ga) "energy recovery" means energy recovery from waste that is conversion of waste material to usable heat, electricity or fuel through a variety of processes including combustion, gasification, pyralisation, anaerobic digestion & landfill gas recovery;"

33.5. Clause 3(u) of the Plastic Waste Management Rules, 2016 (as amended in 2018) defines "multi – layered packaging" as under:

> *"(u) "recycling" means the process of transforming segregated plastic waste into a new product or raw material for producing new products";*

34. In view of the aforementioned and at the outset, it is stated as under:

34.1. The Respondent No.12 Company's carton packaging is in fact paper-based aseptic carton, a responsibly manufactured product, which is fully recyclable and increasingly being recycled in India;

34.2. The paper-based aseptic carton of the Respondent No. 12 ought not be confused with Multi-Layered Plastics such as chips packets and shampoo sachets amongst others (hereinafter referred to as "MLP") which are difficult to collect and recycle, as is in fact being sought to be so done by the Applicants;

34.3. The paper-based aseptic carton of the Respondent No. 12 has been explicitly distinguished from MLP and has been assigned a separate category of "Paper-Based Carton Packaging using one layer of plastic" by way of Notification dated 30.06.2018 issued by the Maharashtra Government. It is clarified that in the aforementioned Notification, "Multi-layered Packaging" is also defined as a separate category.

34.4. The paper-based aseptic carton of the Respondent No. 12 / Tetra Pak is in fact features as a separate head / category in the Maharashtra Pollution Control Board website as "Tetrapack", where in fact "MLP" also features as a **separate category**;

34.5. Separate international HSN Code "48115910" has been assigned for "Aseptic Packaging Paper" that differentiates Aseptic Packaging Paper such as Tetra Pak packaging material from Multi-Layered Plastics which falls under HSN Code 7602.

34.6. The Expert Committee comprising representatives of the FSSAI, BIS, MoEFCC, CPCB and DGHS (Expert Committee), constituted vide the order dated

31.05.2019 passed by the Principal Bench of the Hon'ble National Green Tribunal in the Original Application No. 15/2014 has recognized and recommended the use of the paper-based cartons such as Tetra Pak cartons as a viable alternative to the plastics packaging format;

34.7. The Bureau of Indian Standards has published the Indian Standards IS 17753 of 2021 that clearly distinguishes paper-based carton packaging such as Tetra Pak cartons as "Paper-based Multilayer Laminated/Extruded Composite Cartons (Aseptic and Non-Aseptic) for Processed Liquid Food Products and Beverages", which is distinct from MLP;

34.8. The study conducted bv The Energy and Resources Institute (TERI) across 20 cities in 2019 concluded that the recycling rate of used paper based aseptic cartons is ~40% and is currently estimated at ~50%;

34.9. Over the past 18 years, the Respondent No.12 has established a paper-based cartons collection network that has expanded across 26 states and Union Territories, including partnerships with four recyclers and about 30 NGOs;

34.10. The Respondent No.12 Company has identified recyclers to purchase used paper-based cartons and recycle them into numerous value-added products which has commercial application for more than a decade as mentioned hereinbelow.

35. It is stated that the Respondent No. 12 craves leave to detail the aforementioned in the subsequent paragraphs. It is sated that the Respondent No.12 Company's paper-based aseptic beverage carton packaging are recyclable and increasingly being recycled in India.

➔ ***CREDENTIALS OF THE RESPONDENT NO. 12 AND THE WIDESPREAD UTILISATION OF RESPONDENT NO. 12 PAPER-BASED PACKAGING MATERIAL IN THE FOOD & BEVERAGES INDUSTRY***

36. The Respondent No.12 Company is an industry leader in food processing and packaging solutions, having conducted operations in India for nearly 35 years, with a global history spanning more than 70 years.

37. The Respondent No.12 Company works in partnership with leading food and beverage corporations like GCMMFL (Amul),

Parle Agro, Dabur Foods, Mother Dairy, Verka Dairy, Karnataka Milk Federation, Cavin Kare, Britannia, Mahanand Dairy, Nestlé amongst various others. In this way, the Respondent No.12 Company plays a key role to make food safe through its aseptic processing solutions and to keep food safe through its pioneering aseptic (paper based) packaging technology.

38. The Respondent No.12 Company's aseptic technology, thus, enables producers of milk, juice and other products to offer the benefits of paper-based carton packaging across India and in export markets, without the need for preservatives or a cold chain. The Respondent No.12 Company's commitment to *"make food safe and available, everywhere"* aligns with the Indian nation's need to ensure food security and accessibility.

39. The Respondent No.12 Company has put in several decades of investment in recycling infrastructure and consumer outreach in India long before any legal obligations in this area were even conceived.

40. Given this unique set of benefits, the Respondent No.12 Company's paper-based aseptic carton technology was named the most important food science innovation and invention of

the 20th century by the US-based Institute of Food Technologists, a Food-Science Think-Tank.

41. Given the absence of a developed cold chain for food storage and transportation in India, paper-based aseptic carton technology enables the packaging, storage and delivery of food safely and cost-effectively to consumers across the nation, including distribution to our nation's most remote regions.

42. The Respondent No.12 Company applies the same exacting food safety standards as part of its global product specifications across all of its 33 packaging material manufacturing facilities globally (including one Award-Winning State-of-the-Art Factory at Chakan, India), which serve more than 175 countries. In brief, the Respondent No.12 Company's products meet the leading international and Indian regulations governing food contact materials designed to protect public health.

43. The Respondent No.12 Company has for many decades and since its entry into the Indian market complied with all applicable **(a)** health and food safety standards and **(b)** environmental requirements as prescribed by the various statutory and other government authorities of India. India is entirely in step with modern environment and food safety

legislation. The laws of India permit the nation to benefit from the finest packaging technology available globally.

44. The Respondent No.12 Company humbly submits that the proceedings before the Hon'ble National Green Tribunal have only served to reaffirm that the Respondent No.12 Company's paper-based aseptic carton technology has earned, and continues to earn, the privilege of serving the Indian consumer based on its indispensable features and benefits and longstanding leadership in both food safety and environmental realms.

45. In sum, the Respondent No.12 Company continues to comply not only with Indian laws and regulations but also with those of all of the more than 175 countries in which the Respondent No.12 Company operates.

➔ THE PAPER-BASED ASEPTIC CARTON OF THE RESPONDENT NO. 12 IS DIFFERENT AND DISTINCT FROM MLP AND WIDELY RECOGNISED AS SUCH UNDER VARIOUS LAWS, RULES AND REGULATIONS

46. It is stated that the Respondent No.12 Company cartons are *not* the same as Multi-layered Plastics (MLP). Paper-based cartons

are properly and routinely recognized as a category separate and different from the MLP under various laws, rules and regulations.

47. Indeed, the Plastic Waste Management Rules 2016 as amended in 2018 directed phasing out of manufacture and use of non-recyclable multi-layer plastics by March, 2020. In contrast, aseptic paper-based carton packaging, like that of the Respondent No. 12, is recyclable and increasingly being recycled in India, unlike MLP (as that type of packaging is typically understood).

48. But the Applicant appears to seize upon an ambiguity (now in the process of being rectified in various ways) in the PWMR that broadly defines ***"Multi-Layered Packaging"*** as: *"any material used or to be used for packaging and having at least one layer of plastic as the main ingredient in combination with one or more layer of materials such as paper, paper board polymeric materials, metalized layers or aluminum foil, either in the form of a laminate or co-extruded structure."*

49. Regrettably, this current PWMR definition thus, broadly includes <u>all formats of plastic packaging</u> including multi-layered plastics such as metallized plastics used for chips

packages, and shampoo sachets. But unlike paper-based cartons such as Tetra Pak carton packages, MLP products are notoriously difficult to collect and recycle.

50. It is stated that the PWMR definition does not itself yet explicitly differentiate aseptic cartons which contain predominantly paper in combination with small amounts of other materials such as plastic and aluminum foil. But the practical reality as already recognized by other government stakeholders and as experienced daily by environmental infrastructure and waste stream participants is that *paper-based aseptic carton has superior recyclability and is vastly preferable to MLP regarding environmental impact.*

51. The Applicant's conflation of MLP with paper-based aseptic carton seeks to sow confusion by avoiding these basic and common distinctions, which are well-recognized in the industry. Furthermore, as explained below, government and agency initiatives have sought repeatedly to remedy this ambiguity in the phrasing of the definition with the aim of distinguishing Tetra Pak cartons from MLP.

52. Recognizing the need to differentiate paper-based aseptic carton from MLP, the Maharashtra Government issued a

Notification dated 30.06.2018 (while amending one of its Notification dated 23.03.2018) to include the definition of ***"Paper-Based Carton Packaging using one layer of plastic"*** while also defining "Multi-layered Packaging" as a separate category from Paper-Based Carton Packaging.

53. *Vide* the aforementioned Notification, "Multi-layered Packaging" was defined as "*any material used or to be used for packaging and having at least one layer of plastic as the main ingredient in combination with one or more layers of material such as paper, paperboard, polymeric materials, metalized layers or aluminium foil either in the form of laminate or co-extruded structure"* and "Paper-Based Carton Packaging using one layer of plastic" was defined as *"a container for liquid and solid food and beverages (e.g. milk, juice, etc.), where the primary constituent material is paper-board and which may have one or more layer of plastic, foil necessary to allow safe and hygienic consumption."*

A copy of the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, transport, handling and Storage), Notification, 2018 dt. 23.03.2018, Amendment Notification dt.

11.04.2018 and Amendment Notification dt. 30.06.2018 are attached herewith and marked as "**Annexure R12/4 (Colly)"**

54. Furthermore, it is stated that in respect of PWMR, vide the Notification dated 30.06.2018, the following provisions were inserted to the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, transport, handling and Storage), Notification, 2018 dt. 23.03.2018. From the following provisions it shall also be amply evident that the Government of Maharashtra recognizes *"non-recyclable multi-layered plastic" and "paper-based carton packaging material"* as different and distinct categories. The relevant provisions are reproduced hereunder:

> *"(1) As per Plastic Waste Management Rules, 2016 issued vide 18th March 2016, by the Ministry of Environment, Forest and Climate Change, Government of India, manufacture and use of non-recyclable multi-layered plastic if any, should be phased out in two years' time. Since, the two years' time is over, the Manufacturers should stop use of non-recyclable multi-layered plastic immediately.*

(2) The manufacturer/brand owner/producer of recyclable multi-layered and paper-based carton packaging material using one layer of plastic /Manufacturer's Association, shall diligently implement their Extended Producer's Responsibility (EPR) Plan which includes co-ordination/ collaboration with existing Rag pickers/ Scrap Traders, retailers for collection of plastic waste and its subsequent recycling and final disposal through their own established recycling plant or registered recyclers by establishing Producer's Responsible Organisations (PRO), which shall be responsible for 100%integral Plastic Waste Management right from collection to final disposal.

(3) Extended Producer's Responsibility (EPR) Plan of the manufacturer/brand owner/producer of multi-layered and paper-based carton packaging material using one layer of plastic shall be reviewed after three months from the date of issuance of this notification and on the basis of the outcome of

review, further decision will be taken for regulation."

55. At this juncture, it is reiterated that the Respondent No. 12 has one plant in India at Chakan, Maharashtra and for reasons thereof, for any and all compliances under the Environment Protection Act, 1986 and rules/regulations framed thereunder, the Respondent No. 12 is subject to the jurisdiction of the Maharashtra Pollution Control Board. Pertinent to mention that the Respondent No. 12 is governed by the various laws/ rules and regulations promulgated by the State of Maharashtra.

56. Furthermore, the Maharashtra Pollution Control Board online portal for PWMR registration has a separate category for paper-based beverage cartons as "Tetrapack" *[sic],* clearly distinguishing carton packaging from other categories like PET and MLP. Incidentally, the Respondent No.12 Company have requested that the MPCB correct the category of "Tetrapack" to "Paper-Based Cartons" as Tetra Pak is a trademark of the Tetra Pak group, *vis-à-vis,* the Respondent No.12 Company. The screenshot of the aforesaid website of MPCB is annexed hereunder, for the ready reference of this Hon'ble Tribunal;

Market:			
General : Yes	Defence : No	Medical : No	Export : Yes
SEZ : No	Horticulture : No		
Type of plastic products:			
Industrial packaging : No	Grocery bags : No	Milk pouches : No	Plastic containers : No
Plastic bottle : No	MLP : No	Tetrapack : Yes	Composatble plastic bag : No

A copy of the printout of the snapshot of the MPCB website is attached herewith and marked as **"Annexure R12/5"**

57. Recycling codes identify the material from which an item is made to facilitate easier recycling or other reprocessing. Such recycling codes have been developed for plastics, glass, metals, paper, paper-based cartons and other products. Various countries have adopted different codes. For example, recycling codes have been adopted in India for polymer resin (plastic) but not for other categories. Beverage cartons are **(i)** made primarily of paper; **(ii)** have a composite structure with thin layers of polymer and aluminum; **(iii)** are technically and commercially recyclable and increasingly being recycled; and **(iv)** are inherently different and distinct from plastics and plastics-based packaging – such as MLP, to which PWMR assigned recycling code "7." The correct recycling identification

code for paper-based cartons is "84" under the European Commission Decision of 28.01.1997 (97/129/EC).

ANNEX VII

Numbering and abbreviation system (1) for composites

Material	Abbreviation (2)	Numbering
Paper and fibreboard/miscellaneous metals		80
Paper and fibreboard/plastic		81
Paper and fibreboard/aluminium		82
Paper and fibreboard/tinplate		83
Paper and fibreboard/plastic/aluminium		84
Paper and fibreboard/plastic/aluminium/tinplate		85
		86

58. Further reflecting the reality on the ground, several other States and Union Territories including Chandigarh, Kerala, Odisha, Maharashtra have issued pictorial advisories in connection with their various environmental initiatives. These advisories depict paper-based carton packaging as a separate and permitted category – which they thereby explicitly distinguish from MLP. A copy of the Pictorial Advisory issued by Department of Environment, Chandigarh Administration is annexed herewith and marked as **"Annexure R12/6".** A copy of the Pictorial Advisory issued by Department of Environment, Government of Maharashtra in collaboration with Maharashtra

Pollution Control Board is annexed herewith and marked as **"Annexure R12/7".**

59. Indeed, there is even a separate international **HSN Code for "Aseptic Packaging Paper"** that differentiates Aseptic Packaging Paper such as Tetra Pak packaging material from Multi-Layered Plastics in general. Under Indian Customs Tariffs and GST Tariffs, *"Paper based packaging such as 'Aseptic Packaging Paper' falls under Chapter 48"*, which describes paper and paper-based products. MLP falls under an entirely different Chapter with HSN Code as 7602.

➔ ***RECOGNITION OF "PAPER BASED CARTONS" IN EXPERT COMMITTEE REPORT***

60. On 31.05.2019, the Principal Bench of the Hon'ble National Green Tribunal (in the Original Application No. 15/2014) directed the Food Safety and Standards Authority of India (FSSAI) to assemble an Expert Committee comprising representatives of the FSSAI, BIS, MoEFCC, CPCB and DGHS (Expert Committee). The Expert Committee then timely furnished its report on 30.08.2019, with the Hon'ble Tribunal, as required.

61. The drafters of the Expert Committee Report dated 30.08.2019 (Expert Committee Report) went beyond merely recognizing paper-based cartons such as Tetra Pak cartons as a lawful packaging format. Indeed, the esteemed Experts counselled in favour of the *expanded use* of paper-based cartons to include water applications. The Expert Committee Report specifically cited the advantageous lower-plastic footprint of paper-based carton packaging. The relevant portion of the report follows:

> *"(4) ... Existing packaging systems of paper-based cartons with minimal plastics as coatings, composite and reusable containers made up of glass, tin, metal and paper maybe promoted as replacements. A list of alternatives to plastic packaging material as suggested by Centre for Science and Environment (CSE) is at Annexure-2."*

A copy of the Expert Committee Report dt. 30.08.2019 comprising representatives of the FSSAI, BIS, MoEFCC, CPCB and DGHS (Expert Committee) constituted vide the order dated 31.05.2019 passed by the Principal Bench of the Hon'ble National Green Tribunal in the Original Application No.

15/2014 is attached herewith and marked as **"Annexure R12/8"**

62. The Applicant attempts to wrongly paint TetraPak paper-based cartons as posing an environmental hazard which amounts to a 20% plastic food-contact layer within its six-layer carton package design. The Applicant takes this position despite the Expert Committee Report's explicit praise of Tetra Pak's paper-based aseptic carton technology as conferring cutting-edge food safety benefits while maintaining a lower plastic footprint.

63. Life Cycle Analysis (LCA) studies conducted at various locations including in India over many years consistently show that paper-based carton packaging has a lower carbon footprint than any alternative food and beverage packaging. A copy of the "Life Cycle Assessment of Beverage Carton" is annexed herewith and marked as **"Annexure R12/9".**

64. In parallel, Bureau of Indian Standards has eliminated any doubt on this point by publishing the Indian Standards IS 17753 of 2021 that clearly distinguishes paper-based carton packaging such as Tetra Pak cartons (which the BIS calls "Paper-based Multilayer Laminated/ Extruded Composite

Cartons (Aseptic and Non-Aseptic) for Processed Liquid Food Products and Beverages" from MLP as typically understood.

➔ ***RECYCLABILITY OF RESPONDENT NO. 12 PAPER-BASED PACKAGING MATERIAL AND ITS RECYCLING ECOSYSTEM***

65. The Respondent No.12 Company, Tetra Pak, has supported Indian environment initiatives with funding and resources long before operative legislation emerged. The Tetra Pak carton packaging of the Respondent No.12 Company is a paper-based, responsibly manufactured product, are fully recyclable and increasingly being recycled in India.

66. Over the past 18 years, the Respondent No.12 Company established a paper-based cartons collection network that has expanded across 26 states and Union Territories, including partnerships with four recyclers and about 30 NGOs and other organizations whose mandate includes increasing collections and creating awareness among millions of Indian citizens about the importance of recycling and responsible household waste segregation and disposal.

67. The following videos show the fully developed technical processes for recycling of used paper-based cartons packages established in India:

https://www.youtube.com/watch?v=0VuQ9QFzXYA;

https://www.youtube.com/watch?v=oGpgAYAc48c.

A copy of the CD comprising of the downloaded versions of the said videos is annexed herewith and marked as **"Annexure R12/10".**

68. In parallel, the Respondent No.12 Company, has also identified recyclers to purchase used paper-based cartons and recycle them into numerous value-added products. For instance, the chipboard used as the base for the seats of three-wheeled auto rickshaws manufactured by Bajaj Auto since 2004 is actually manufactured from recycled Tetra Pak cartons only. In 2018 alone, Bajaj Auto sold more than half a million three-wheeled auto rickshaws using this recycled Tetra Pak carton-based chipboard. Since then, other vehicle manufacturers such as TVS Motors and Atul Auto are likewise using recycled Tetra Pak carton-based chipboard for similar vehicle seating applications. Tetra Pak carton-based chipboard is also used to manufacture

school and garden benches, roofing sheets and also serves as a substitute for general-purpose plywood.

69. The Respondent No.12 Company, Tetra Pak, is gratified that its pioneering work in building a used carton recycling ecosystem (well in advance of any legislative requirement that it do so) is respected in industry and waste-trade circles. The Respondent No.12 Company's latest initiative has been to serve as a founding member of the "Action Alliance for Recycling Beverage Cartons" (hereinafter referred to as "AARC"). AARC, a first-of-its-kind initiative through which leading corporations have joined together with government authorities, NGOs, local communities and other stakeholders in the service of an ambitious mission: To radically transform the recycling landscape and positively impact millions of citizens who earn their livelihoods in the waste trade for beverage cartons.

70. The AARC is focused on creating a modern end-to-end waste management ecosystem to rival that of any nation. Along with the Respondent No.12 Company, M/s Tetra Pak India Private Limited, as its founding member, AARC is proud to count among its member companies such as CavinKare, Coca-Cola, Dabur India, Diageo India, Parle Agro, Halewood Laboratories, John

Distilleries, Karnataka Milk Federation, Parag Milk Foods, Radico Khaitan, Schreiber Dynamix Dairies, SIG Combibloc, Hector Beverages, Johnson & Johnson and Varun Beverages.

71. The Respondent No.12 Company is likewise gratified that it has achieved a remarkably high recycling rate in India. The most recent nationwide study by The Energy and Resources Institute (TERI) across 20 cities conducted in 2019 concluded that the recycling rate of used paper-based aseptic cartons is ~40% (currently estimated at ~50%).

A copy of the Executive Summary of the TERI Report along with the relevant pages of the TERI Report are annexed herewith and marked as **"Annexure R12/11 (Colly.)".**

72. Importantly, the recycling rate of the used paper-based beverage cartons in southern part of India is relatively high *i.e.* ~100% in cities of Bengaluru and Mysuru, ~80% in Hyderabad, and ~65% in Chennai. The Respondent No.12 Company's paper-based carton packaging material has been analyzed by the Central Pulp and Paper Research Institute, and has presented its findings in its *"Report on Repulpability and Paper Making Potential of Used Tetra Pak Cartons"*. This Report makes it clear that the quality of recovered fibre from Tetra Pak

cartons is superior to that of Indian Old Corrugated Cartons (OCC).

73. The Respondent No.12 Company, Tetra Pak continues to invest massively in improving its offerings. The Respondent No.12 Company's top priority is to innovate rapidly toward the introduction of a carton package **(1)** made from renewable or recycled packaging materials, **(2)** which will continue to be fully recyclable and play a key role in a low-carbon circular economy, **(3)** all without ever compromising on food safety requirements. Even today, the carton packages of the Respondent No.12 Company are primarily paper-based and fully recyclable. In the years to come, Tetra Pak packaging will continue to reduce its environmental footprint by continuing to minimize fossil-derived plastic and carbon emissions and by increasing its use of sustainably sourced plant-based packaging materials.

74. Astonishingly, the documents placed by the Applicant are brazenly misleading and easily refuted based on a cursory review of publicly available third-party evidence. The Respondent No.12 Company highlights the following ham-handed attempts by the Applicant to confuse and distract this

Tribunal as to the environmental credentials of Tetra Pak in India and globally:

73.1. On page 13 of the captioned Application, the Applicants submits the misleading data claiming to show that during 2019-20, the Respondent No.12 Company produced 185,100 MT of the packaging material. It also provides the reference of the Respondent No.12 Company's Director's report of 2019-20 wherein it was mentioned that the production of packaging material for the year was 12.34 billion packs and the sales of packaging material during the year was 12.52 billion packs.

73.2. On page 14 of the Application, the Applicants explain their own misinterpretation by stating their baseless method of computation by assuming 18 grams as the weight of each pack.

73.3. The Applicant has knowingly misled the Hon'ble Tribunal by not clarifying the following:

73.3.1. Out of total sales of 12.52 billion packs, the domestic sales of the packaging material sold to the Brand Owners or Manufacturers in India was

9.44 billion packs, and the balance of 3.08 billion packs were exported out of India.

73.3.2. The packaging material supplied by the Respondent No.12 Company was not of same size as it varies from 65ml to 1000ml, and accordingly their weight varies from 3gms to over 20gms. The total grammage of packaging material produced by the Respondent No.12 Company during 2019-20 was 77,003 MT by the average weight per package considered as 7.5 gms.

73.3.3. Based on the aforesaid baseless and misleading assumptions, the Applicants mentioned that only 3% of the packaging material are recycled.

73.3.4. Merely for good order and sound comparison of the data, it is stated as follows:

PARTICULARS	**2019 - 2020**	**UNIT**
Sales in India (by weight)	77,003	MT
Collected and sent for recycling for the used beverage cartons	30,936	MT
Collection and Recycling Rate in India	40	%
2019 recycling rate based on TERI study (for top cities in Southern India):		
Bengaluru	100	%

Mysuru	100	%
Hyderabad	79.67	%
Chennai	65.24	%

In sum, the details in the table provided by the Applicants in their Application are blatantly misleading do not support and are indeed irrelevant to any of the allegations Applicants raise.

75. The Applicants also fail to account for the disruption to the food supply that would result from acceptance of its unsubstantiated criticisms of the Respondent No.12 Company aseptic carton packaging technology.

76. At root, the Applicants' Application is aimed at reducing competition from proven and safe packaging modalities at any cost to the public good. The Applicants' *mala fide* intent is especially evident in relation to the paper-based carton packaging where a large segment of the consuming public strongly prefers Tetra Pak's aseptic and tamper-evident technology to other packaging formats including glass bottles.

77. The Respondent No.12 Company respectfully submits that the Applicants frivolous contentions in the captioned Application offers no credible evidence to show or any reasonable basis to counter the conclusions that the nation of India should promote the adoption of paper-based cartons such as Tetra Pak low-

carbon/ low-plastic footprint products due to environmental considerations.

III. PARAGRAPHWISE REPLY

78. The contents of para I of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

79. The contents of para II of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

80. The contents of para III of the captioned Application under Reply are wrong and denied for being false, frivolous and misconceived in nature save and except otherwise which are a matter of record and hence, merit no response from the Respondent No.12 Company. It is vehemently denied that as per the information available with the Applicants one of the largest producers of multi-layered cartons is recycling only 3% of its product and it is not used for either energy recovery which will cause huge pollution and also there is no alternative use, as alleged. It is further vehemently denied that the entire multi-layered cartons produced, which is about 2,25,360 metric

tonnes (for the year 2019-20 as per the financial statements of Tetra Pak India Pvt. Ltd.) of multi-layered cartons, is disposed of in the environment without recycling, as alleged. The Applicants are put to strict proof, thereof. It is respectfully submitted that the Applicants have merely stated uncorroborated and unsubstantiated bald averments which have no evidentiary value before this Hon'ble Tribunal. The contents of the preceding paragraphs be read in Reply.

81. The contents of para IV of the captioned Application under Reply do not pertain to the Respondent No.12 Company and hence, merit no response from the Respondent No.12 Company, thereof.

82. The contents of para 1 of the captioned Application under Reply are wrong and denied for want of knowledge, and for being false, frivolous and misconceived in nature. The Applicants are hereby put to strict proof, thereof. It is respectfully submitted that the Applicants do not have a *locus standi* and/or *modus operandi* in filing the captioned Application and thereby falsely, arraying the Respondent No.12 Company in the captioned Application.

83. The contents of para 2 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company. However, it is vehemently denied for want of knowledge that the Respondent No.12 Company is responsible for production of multi-layered plastics in India, as alleged.

84. The contents of para 3 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

85. The contents of para 4 of the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. The Applicants are hereby put to strict proof, thereof. It is vehemently denied that as per the information available with the Applicants one of the largest producers of multi-layered plastic is recycling only 3% of its product and it is not used for either energy recovery which will cause huge pollution and also there is no alternative use, as alleged. It is therefore, further vehemently denied that the entire multi-layered packaging produced which is about 2,25,360 metric tonnes of multi-layered packaging is disposed in the environment without any redressal, as alleged.

86. The contents of para 5 of the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature, save and except otherwise which is a matter of record, which shall merit no response from the Respondent No.12 Company. The Applicants are hereby put to strict proof, thereof. It is, therefore, submitted that the Respondent No.12 Company's carton packaging is a paper-based, responsibly manufactured product, which is fully recyclable and increasingly being recycled in India. It is pertinent to note that the same should not be confused with Multi-Layered Plastics (MLP) which are difficult to recycle.

87. The contents of para 6 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

88. The contents of para 7 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

89. The contents of para 8 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

90. The contents of para 9 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

91. The contents of para 10 of the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature, save and except otherwise which is a matter of record, which shall merit no response from the Respondent No.12 Company. The Applicants are hereby put to strict proof, thereof. It is vehemently denied that with regard to the other major producer *i.e.* Tetra Pak India Pvt. Ltd., there are about 12.34 billion multi-layered packaging (as per the Director's Report, Financial Statements for the period 01.04.2019 to 31.03.2020) produced by the company which is approximately equal to 1,85,100 metric tonnes of multilayered packaging, as alleged. In response to the instant para under Reply, reliance may be placed upon the contents of the preceding paragraphs of the Preliminary Submissions, the contents of which are not being repeated herein for the sake of brevity.

92. The contents of para 11 of the captioned Application under Reply are wrong and denied for want of knowledge and for

being false, frivolous and misconceived in nature. It is vehemently denied that only about 3% of multilayered packaging of Respondent No. 12 are recycled, as alleged. It is further denied that there is no information with respect to disposal of the multi-layered packaging by way of energy recovery or alternative use, as alleged. It is pertinent to submit that the Applicants has merely relied on information which is being derived from *"different sources"* which are evidently undisclosed, unidentified and unverified. Needless to mention that the source of such information relied upon, casts serious doubt on the veracity, reliability and credibility of the information which is being placed before this Hon'ble Tribunal by the Applicants with *mala fide* intent. The contents of the table stipulated in the instant para by the Applicants, are vehemently denied for want of knowledge, and for being misconceived, misconstrued and misinterpreted in nature. It is vehemently denied that it is clear from the table that only a negligible amount of multi-layered cartons are being recycled, which is going down year by year, as alleged. The Applicants are hereby put to strict proof, thereof. Following are a few data points as

have been maintained and derived by the Respondent No.12 Company during the regular course of business:

Data Point	Data	Comments/ Units
Total Sales for FY2019-20	12.52	Billion Packs
Domestic Sales (India) for FY2019-20	9.44	Billion Packs
Total Cartons Sold in India	77,003	Metric tonnes
Average weight per package	7.5	Gram
2019 Recycling Rate based on TERI study	54%	Based on survey of top 20 cities

Few Cities Recycling Rates as per TERI Study	Recycling Rate	State
Bengaluru	100%	Karnataka
Mysuru	100%	Karnataka
Hyderabad	79.67%	Telangana
Chennai	65.24%	Tamil Nadu

93. The contents of para 12 of the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature, save and except otherwise which are a matter of record, which merit no response from the Respondent No.12 Company. It is vehemently denied that the recycling of multi-layered cartons of Respondent No. 12, is about 3% in the years 2017-18, 2018-19 and 2019-20, as alleged. It is vehemently denied that the

exact data with respect to the recycling is not available, as alleged. It is further vehemently denied that there is almost no recycling of domestic multi-layered carton waste in these recycling unit, as alleged. In response to the instant para under Reply, reliance may be placed upon the contents of aforementioned paras of the Preliminary Submissions, contents of which are not being repeated herein for the sake of brevity.

94. The contents of para 13 of the captioned Application under Reply are wrong and denied for being false, frivolous and misconceived in nature. Further, the contents of the table mentioned in the instant para do not pertain to the Respondent No.12 Company and hence, merit no response from the Respondent No.12 Company, thereof. It is vehemently denied for want of knowledge that the recycling units *(mentioned in the table in the instant para in the captioned Application)* are funded directly by Tetra Pak India Pvt. Ltd. to dispose of some of the multi-layered packaging waste, which are not collected within the country but imported from outside, as alleged. It is further denied that this fact can be verified from the perusal of Corporate Social Responsibility document of Tetra Pak India

Pvt Ltd., which clearly states that they directly funded the recycling unit for the purpose of recycling, as alleged.

95. The contents of para 14 of the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature, save and except otherwise which are a matter of record, which merit no response from the Respondent No.12 Company. It is denied for want of knowledge that the multi-layered packaging are not being recycled in India is also clear from the fact that recycling of multi-layered packaging costs more than its production because of its multi-layered nature and this is also a reason why Tetra Pak India Pvt Ltd./Respondent No. 12 is funding under their CSR, some of the recyclers to recycle multi-layered packaging, which is a negligible amount of the total multi-layered packaging produced, as alleged. It is further denied for want of knowledge that multi-layered packaging in India is not commercially viable due to the structure of multi-layered packaging; *i.e.* multiple layers of plastic, paper and aluminum are stuck together with adhesive and cannot be separated from each other, as alleged. It is vehemently denied that there is no information or evidence to suggest that any technology in India

can be used to separate the layers of multi- layered packaging so as to make it recyclable, as alleged. It is further denied for want of knowledge that multiple layers cannot be recycled together because each kind of layer will require different processes to be recycled, as alleged.

96. The contents of para 15 of the captioned Application under Reply are wrong and denied for want of knowledge and for being misconceived, misconstrued and misinterpreted in nature. It is respectfully submitted that the Applicants have relied upon the media publications which are not verified and bear no legal sanctions to affix any evidentiary value to the same. Thereby, it is evident that the Applicants have merely based their case on inadmissible media publications and information collected through unidentified and unverified sources.

97. The contents of para 16 of the captioned Application under Reply merit no response from the Respondent No.12 Company.

98. The contents of para 17 of the captioned Application under Reply merit no response from the Respondent No.12 Company. However, the Respondent No.12 Company is consistently being proactive in its measures to safeguard the environment and has

been involved in many cities to set up collection centers for used beverage cartons (UBCs), as well as in raising awareness among the public through information, education and capacity building programs, which has also been taken into account in the periodic studies conducted by TERI as a voluntary initiative undertaken by the Respondent No.12 Company to ensure it received objective data to measure the success of its efforts to preserve the environment.

99. The contents of para 18 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

100. The contents of para 19 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

101. The contents of para 20 of the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

102. The contents of para 21 of the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is vehemently denied for want of knowledge that Tetra Pak India

Pvt. Ltd. follows an economic model that has resulted in poor recovery rates and that as per Applicants' field investigations, Tetra Pak carton only fetches a negligible amount of Rs.4 to Rs.8 per kilograms in the informal waste market, as alleged. It is submitted that the Applicants are merely placing its reliance upon bald averments and assertions which are based upon unidentified and unverified sources. It is further denied that these disincentivizes wastepickers from collecting multi-layered packaging resulting in low collection rates, as alleged. That the Applicants have based their case upon assumptions and unsubstantiated contentions casts serious doubt on the allegations made by the Applicants against the Respondent No.12 Company. In response to the instant para under Reply, reliance may be placed upon the contents of aforementioned paras of the Preliminary Submissions, contents of which are not being repeated herein for the sake of brevity.

103. The contents of para 22 of the captioned Application under Reply merit no response from the Respondent No.12 Company.

104. The contents of para 23 of the captioned Application under Reply merit no response from the Respondent No.12 Company.

105. The contents of para 24 of the captioned Application under Reply merit no response from the Respondent No.12 Company.

106. The contents of para 25 of the captioned Application under Reply merit no response from the Respondent No.12 Company.

107. The contents of para 26 of the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is vehemently denied for want of knowledge that because the figures depicting the recycling of multi- layered packaging are from the recycling facilities that are directly funded by Tetra Pak itself, as alleged. The Applicants are hereby put to strict proof, thereof. It is denied that this is evident from the CSR activities of Tetra Pak/Respondent No. 12, as alleged. It is further denied that therefore, those figures are only meant to mislead regarding the recyclable nature of multi-layered packaging, as alleged. It is further vehemently denied that this recycling is also only in the form of conversion of multi- layered packaging into chairs and benches which is not being done at a market level, as alleged. In response to the instant para under Reply, reliance may be placed upon the contents of the

preceding paragraphs of the Preliminary Submissions, contents of which are not being repeated herein for the sake of brevity.

108. The contents of para 27 of the captioned Application under Reply merit no response from the Respondent No.12 Company.

109. The contents of para 28 of the captioned Application under Reply merit no response from the Respondent No.12 Company.

110. The contents of para 29 of the captioned Application under Reply merit no response from the Respondent No.12 Company. It is respectfully submitted that the Applicants have placed reliance upon the grounds which are unsupported in law, devoid of merit and lack credence and reliability for the purposes of an effective adjudication of the concerns raised by the Applicants in the captioned Application. The para-wise reply to each ground mentioned by the Applicants is herein as under:

111. The contents of ground A of grounds mentioned in the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

112. The contents of ground B of grounds mentioned in the captioned Application under Reply are a matter of record and hence, merit no response from the Respondent No.12 Company.

113. The contents of ground C of the grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied that Respondent No. 12 is recycling only about 3% of its product and it is not used for either energy recover which will cause huge pollution and also there is no alternative use, as alleged. It is denied that the entire multi-layered packaging produced (as per details provided in financial statements of Tetra Pak for the year 2019-20) which is about 2,25,360 metric tonnes of multi-layered plastic is disposed in the environment, as alleged. It is pertinent to submit that the Applicants' case is purely based upon mere presumptions and assumptions while there are no legal sanctions to the contentions raised by the Applicants. In view thereof, the entire case of the Applicants becomes meritless and hence, is liable to be dismissed outrightly.

114. The contents of ground D of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that because it is commercially not possible to separate the 6 layers

of packaging (4 layers of polyethylene, 1 layer of paper and 1 layer of Aluminum), due to which the multi-layered packaging is neither recyclable nor energy recoverable, as alleged.

115. The contents of ground E of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and hence, merit no response from the Respondent No.12 Company.

116. The contents of ground F of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that as per the information available of one of the manufacturers of multi-layered packaging *i.e.* Tetra Pak India Pvt. Ltd., there are about 12.34 billion which is approximately 2,25,360 metric tonnes of Tetra Pak packaging cartons is produced in the country in the year 2019-20, as alleged. Needless to mention, the Applicants have also utterly failed to establish that the Respondent No.12 Company is a manufacturer of a multi-layered packaging let alone that the facts and figures being derived and relied upon by the Applicants in the entire Application are fictitious and lack any legal validation.

117. The contents of ground G of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that only approximately 3% of multi-layered packaging is recycled, as alleged. It is further denied that there is no information with respect to disposal of the multi-layered packaging by way of energy recovery or alternative use, as alleged.

118. The contents of ground H of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that only negligible amount of Tetra Pak is being recycled which is going down year by year, as alleged. It is further denied that according to the information available with respect to the recycling of multi-layered packaging from the website of Tetra Pak India Pvt. Ltd. is about 3% in the years 2017-18, 2018-19, 2019-20, as alleged. The Applicants are hereby put to strict proof, thereof. It is pertinent to submit that the Applicants have in a very convenient manner used an interplay of words between multi-layered plastics and paper-based cartons, in

order to mislead this Hon'ble Tribunal, whereas it is evident from the record, that the Applicants have not been able to establish the fact that the Respondent No.12 Company is a manufacturer of multi-layered plastics and not paper-based cartons.

119. The contents of ground I of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that the four recycling units which are showing recycling of multilayered packaging are mostly imported multi-layered packaging and not the waste generated in the country, as alleged. It is denied for want of knowledge that the import data of multi-layered packaging shows that most of the imports have been made by few organisations such as the Deluxe Paper Mart, Khateema Fibres Limited, Deluxe Recycling (India) Private Limited, as alleged. It is vehemently denied for want of knowledge that these recycling units are funded directly by Tetra Pak India Pvt. Ltd. to dispose of some of the multi-layered packaging waste which are not collected within the country but imported from

outside, as alleged. The Applicants are put to strict proof, thereof.

120. The contents of ground J of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that the multi-layered packaging Tetra Pak are not being recycled in India is also clear from the fact that recycling of multi-layered packaging cost more than its production because of its multi-layered nature and this is also a reason why Tetra Pak India Pvt. Ltd. is funding under their CSR agenda, some of the recyclers to recycle Tetra Pak, which is a negligible amount of the total amount of multi-layered packaging actually produced, as alleged. It is pertinent to submit that the Applicants' case is purely based upon mere presumptions and assumptions while there are no legal sanctions/ validations to the contentions raised by the Applicants in the captioned Application. Henceforth, placing reliance upon speculative arguments is meritless and unsupported in law, which is harming the goodwill and marketability of the Respondent No.12 Company.

121. The contents of ground K of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that recycling of multi-layered packaging in India is not commercially viable because of the structure of the multi-layered packaging; *i.e.* multiple layers of plastic, paper and aluminum are stuck together with adhesive and cannot be separated from each other, as alleged. It is further denied that there is no information or evidence to suggest that any technology in India can be used to separate the layers of multi-layered packaging so as to make it recyclable, as alleged. It is further denied that multiple layers cannot be recycled together because each kind of layer will require different processes to be recycled, as alleged. It is vehemently denied that because of this separation process of plastic, aluminum and paper and separate processes are required for recycling of each of the product its recycling cost is substantially high, as alleged. The Applicants are hereby put to strict proof, thereof.

122. The contents of ground L of grounds mentioned in the captioned Application under Reply are wrong and denied for

want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that even if there are technologies to separate the layers of multilayered packaging to make it recyclable, those technologies involve complex scientific procedures which have not been tried practically on multi-layered packaging and are only theoretically possible, as alleged. The Applicants are put to strict proof, thereof. In response to the instant para under Reply, reliance may be placed upon the contents of the preceding paragraphs of the Preliminary Submissions, contents of which are not being repeated herein for the sake of brevity.

123. The contents of ground M of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that multi-layered packaging is also not picked up by waste-pickers or kabadiwalas, as alleged. It is further vehemently denied for being speculative that there is no collection because the multi-layered packaging cannot be recycled and thus do not have any value to the waste-pickers, as alleged. It is further denied that since, no domestic collection takes place, the multi- layered

packaging adds to the rising solid waste pollution in the country, as alleged. The Applicants are put to strict proof, thereof. In response to the instant para under Reply, reliance may be placed upon the contents of the preceding paragraphs of the Preliminary Submissions, contents of which are not being repeated herein for the sake of brevity.,

124. The contents of ground N of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is denied for want of knowledge that multi-layered packaging is not used for energy recovery in the country, as alleged. It is further vehemently denied that because of its structure and other than containing plastic and paper it also contains aluminum and difficult to use in waste energy plant or in incinerator without hugely polluting the environment, as alleged. It is pertinent to submit that the arguments and contentions being placed by the Applicants are subjective and merely speculative which are clearly not establishing any illegal act and/ or omission being carried on by the Respondent No.12 Company.

125. The contents of ground O of grounds mentioned in the captioned Application under Reply merit no response from the Respondent No.12 Company.

126. The contents of ground P and Q of grounds mentioned in the captioned Application under Reply are wrong and denied for being false, frivolous and misconceived in nature. It is respectfully submitted that the Applicants have merely relied upon the media publications which are not verified and bear no legal sanctions to affix any evidentiary value to the same. Thereby, it is evident that the Applicants have merely made their case out from inadmissible media publications and information collected through unidentified and unverified sources.

127. The contents of ground R of grounds mentioned in the captioned Application under Reply merit no response from the Respondent No.12 Company.

128. The contents of ground S of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is vehemently denied for want of knowledge that multi-layered packaging do not have any

alternate use because they are non-recyclable in nature, as alleged. It is further denied that there is some news report which show that multilayered plastic is being used for constructing chairs or benches, as alleged. It is denied that that construction of benches and chairs cannot be considered as an alternative use because the amount of multilayered packaging being used in these applications is negligible as compared to the amount of waste being generated, as alleged. It is denied for want of knowledge that it is not being done at a market level, as alleged. In response to the instant para under Reply, reliance may be placed upon the contents of the preceding paragraphs of the Preliminary Submissions, contents of which are not being repeated herein for the sake of brevity.

129. The contents of ground T of grounds mentioned in the captioned Application under Reply are wrong and denied for want of knowledge and for being false, frivolous and misconceived in nature. It is vehemently denied for want of knowledge that the figures depicting the recycling of multi-layered packaging are from the recycling plants that are directly funded by Tetra Pak itself, as alleged. It is further denied for want of knowledge that this is evident from the CSR activities of

Tetra Pak, as alleged. The Applicants are hereby put to strict proof, thereof. It is denied that those figures are only meant to mislead regarding the recyclable nature of multi-layered packaging, as alleged. It is denied that the recycling is also only in the form of conversion of multi- layered packaging into chairs and benches which is not being done at a market level, as alleged. It is most respectfully submitted that the chipboard used as the base for the seats of three-wheeled auto rickshaws manufactured by Bajaj Auto since 2004 is actually manufactured from recycled TetraPak cartons only. Thereby, it evinces that the paper-based cartons manufactured by the Respondent No.12 Company have an after use commercial viability as well which is economical, practical and in use for decades.

130. The contents of ground U of grounds mentioned in the captioned Application under Reply merit no response from the Respondent No.12 Company.

131. The contents of the para under 'Limitation' of the captioned Application under Reply are wrong and denied, for being misconceived, misconstrued and misinterpreted in nature. It is pertinent to submit that the Applicants have utterly failed to

establish even a single cause of action against the Respondent No.12 Company.

132. By relying upon misleading data and merely sidestepping an abundance of credible evidence that devastates its case, the Applicants have miserably failed to provide any basis to justify its allegations against the Respondent No.12 Company or its paper-based cartons.

133. The Respondent No.12 Company humbly submits that in view of the aforementioned facts and circumstances, the Respondent No.12 Company prays that this Hon'ble Tribunal reject all contentions made by the Applicants in the captioned Application and dismiss the same with costs.

PRAYER

In light of the above facts and circumstances it is therefore most respectfully and graciously prayed that this Hon'ble Tribunal may be pleased to:

a) Dismiss the present Original Application *qua* the Respondent No. 12 with heavy costs upon the Applicants in favour of the Respondent No.12 Company;

(ii) Pass any other order(s) and / or issue such direction(s) as this Hon'ble Tribunal deem fit and proper in the light of the facts and circumstances of the present case.

RESPONDENT NO. 12
THROUGH

S. Bhargavan, Sudhir Mishra and Ritwika Nanda
Trust Legal Advocates & Consultants
Advocates for Respondent No. 12
Chennai Address: Flat No. 5, 2nd Floor, "Ram Mahal", Door No. 167/99, Avai Shanmugam Salai, Royapettah, Chennai – 600014
Delhi Address: C-224, Defence Colony, New Delhi-110024
Email ID: ritwikananda@trustlegal.in; bhargavanadv@gmail.com
Phone: +91 9711721923

DATE: 7/5/2022
PLACE: Delhi

VERIFICATION:

Verified at Delhi on this 7th day of May, 2022 that the contents of the above Reply are true and correct to the best of my knowledge and nothing material has been concealed therefrom and no part thereof is false. It is stated that the contents of paragraph 1 is based on personal knowledge, paragraph 2-5, 12-133 are on the basis of the documents maintained in the ordinary course of business and paragraphs 6-11, prayer is on the basis of the advice rendered to me which are believed to be true and correct.

RESPONDENT NO. 12

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BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

ORIGINAL APPLICATION NO. 22 OF 2022

IN THE MATTER OF:

A. KRISHNA & ORS ...APPLICANTS

VERSUS

UNION OF INDIA & ORS. ...RESPONDENT

AFFIDAVIT

I, Mr. Sharad Chandra Sharma, S/o Late Shri Subhash Chandra Sharma, Aged About 43 years, engaged as the Head of Legal Affairs of the Respondent No.12 Company, having its office at 15th Floor, One Horizon Center, Golf Course Road, DLF Phase 5, Sector 43, Gurgaon -122002, Haryana, presently at New Delhi do hereby solemnly affirm and declare as under:

1. I state that I am the authorized representative of the Respondent No.12 Company and as such I am well conversant and aware of the facts and circumstances of the present case and hence competent to swear and depose the present affidavit.

NOTARY R.M SINGH Advocate Regn.No.2282 Commission Expire on 24-10-2022 Area-Delhi GOVT. OF INDIA

TERRA PAK INDIA PVT. LTD.

2. I state that I have read and understood the contents of the accompanying Reply and I say that the contents thereof are true to my knowledge and derived from the official records and nothing material has been concealed there from.

3. I state that the annexures are true copies of their respective originals.

TETRA PAK INDIA PVT. LTD.

DEPONENT

I identify the deponent who has signed in my presence

23/09/2019

VERIFICATION:

Verified at New Delhi on this 17 MAY 2022 day of May, 2022 that the contents of the above affidavit are true to my knowledge derived from the official records maintained in the regular course of business, no part thereof is false and nothing material has been concealed therefrom.

NOTARY
R.V.Singh
Advocate
Regn.No.2282
Commission
Expire on
24-10-2022
Area-Delhi
GOVT. OF INDIA

FIVE RUPEES
NOTARIAL

TETRA PAK INDIA PVT. LTD.

DEPONENT

Solemnly affirmed before me, read over & explained to the deponent

Notary Public, DELHI

17 MAY 2022

ANNEXURE R12/1

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भारतीय गैर न्यायिक

भारत INDIA

रु. 500 FIVE HUNDRED RUPEES

पाँच सौ रुपये Rs. 500

सत्यमेव जयते

INDIA NON JUDICIAL

महाराष्ट्र MAHARASHTRA ◑ 2021 ◑ BG 321632

- 2 FEB 2022

अनु.क्र............ दि............ रु.प. रक्कम.......... 500/-

दस्ताचा प्रकार.................. POA

दस्त नोंदणी करणार आहेत का? होय/नाही..................

मिळकतीचे वर्णन..................

मुद्रांक विकत घेणाऱ्याचे नांव .... टेट्रापॅक इंडिया प्रा.लि.

पत्ता ....

दुसऱ्या पक्षकाराचे नांव ....

हस्ते व्यक्तीचे नांव व पत्ता ....

मुद्रांक विकत घेणाऱ्याची सही

सौ.शोभा म. .....
परवाना क्र २२०११४९
कार्यालय ....., पुणे-१७

वरिष्ठ कोषागार अधिकारी पुणे

28 JAN 2022

प्रथम मुद्रांक लिपीक कोषागार पुणे करिता.

NOTARY BHIMRAO KAKAD HAVELI, DIST. PUNE MAHARASHTRA Reg. No. 15992 GOVERNMENT OF INDIA

POWER OF ATTORNEY

KNOW ALL MEN by these presents that **Tetra-Pak India Private Limited**, a Private Limited Company incorporated under the Companies Act, 1956 and having its **Registered Office** at Plot No. B-53, Chakan MIDC, Phase II, Village Vasuli, Taluka- Khed, Pune- 410501 (hereinafter called "the Company" do hereby nominate, constitute and appoint **Ms. Ambalika Rana, Finance Director and Mr. Sharad Chandra Sharma, Head of Legal Affairs, South Asia Markets** to be the true and lawful Attorney in fact and at law of the Company ("Attorney/s") in the Union of India for and in the name and on behalf of the Company, severally, to do, execute and perform all or any of the following acts, deeds, matters and things:-

General

1. To execute all agreements, contracts and documents for the arrangements approved by the Board of Directors of the Company or other person authorised by the Board.

2. To effect and maintain insurances on movable and immovable property and insurances against loss and liability generally.

3. To enter in to, carry out, modify or cancel all types of agreements in relation to sell, transfer, give/take on lease or leave and licence or otherwise deal with any immovable property approved by the Board of Directors of the Company/Group Board, make applications to any tax authority, society or other person.

4. To appear before any Sub-Registrar of assurances and/or other Registering Officers appointed for registration of deeds, assurances and contracts, to present register or cause to be registered any such deeds, assurances and agreements or other instruments executed by the Company or in which the Company may be deemed to be interested, to acknowledge and to admit in the name of the Company the execution of all or any such instruments, agreements or deeds, to apply for and to receive any such documents.

5. To accept assignments and surrenders of and to exercise, execute and enforce any rights, powers and remedies incidental to leases and tenancies.

6. To make all necessary applications to the Central or any State Government or to any department of Government and to all municipal and other public bodies, corporations and authorities and for that purpose to sign all necessary applications, petitions and appeals, and in particular to submit plans to municipal and other authorities and to appear before all officers of Government or of the municipal or other public bodies and corporations and before all authorities and to represent the Company in all matters and proceedings in which the Company may be interested or concerned.

7. To represent the Company before Government, Central or State, or any other public body, authority, officer or officers and before all courts of law or tribunal for any purpose connected with or relating to the business, affairs, activities, operations and property of the Company as may be necessary or expedient and other representations on behalf of the Company to the Government or the aforesaid authorities or officers or any of them and for this purpose to sign all the necessary documents, applications and forms as and when required.

8. To prepare, sign, file and amend applications, forms, returns, submissions, petitions, appeals, letters, correspondences and all other requisite documents to the Tax authorities or to any tribunal or court or any other public/statutory authorities and to appear before any officer/s of Income Tax or other public/statutory authorities or tribunal or court and to represent the Company under the Direct Tax and/or Indirect Tax related matters for any purpose connected with or relating to the business, affairs, activities and operations of the Company.

9. To institute, prosecute, defend, oppose, appear or appeal in compromise, refer to arbitration, abandon, submit to judgement, proceed to judgement and execution or become non-suited in any legal proceedings and demands (including trademarks, trade names, trade property and passing off actions and revenue proceedings relating to customs or excise duties, tax or income, profits and capital and taxation generally or otherwise) and to accept service of notices or processes and to give securities or indemnities for costs, to pay money into Court and to obtain payment of money lodged in Court on behalf and in favour of the Company.

10. To appoint tax consultants, advocates, attorneys, vakils, counsels/ pleaders and to decide their remuneration on case-to-case basis in consultation with the VP Legal Market Asia Pacific/Managing Director and to sign, vakalatnamas, power of attorney/letter of authority in favour of these external parties/ retainer from time to time and to revoke the appointment as be necessary to protect the interest of the Company.

11. To present, support or oppose any petition for winding up bankruptcy; to concur in or dissent from any composition or arrangement; to attend and vote or appoint any person to attend and vote as proxy of the Company at any meeting of creditors; to make and file proofs of claim; and generally to represent the Company in any liquidation, bankruptcy or insolvency.

12. For all or any of the purposes of these presents to sign, seal, swear, affirm, declare, deliver, execute, make, enter into, acknowledge, complete record and perfect all deeds,

assurances and instruments whatsoever usual, necessary or expedient including without prejudice to this generality, contracts, conveyances, leases, mortgages, transfers, assignments, surrenders, reconveyances, reassignments, releases, agreements, pleadings, affidavits, declarations, petitions, fire and marine policies of insurance, railway receipts, bonds, debentures, bearer securities, stock or share transfers and certificates, proxies, guarantees, indemnities, undertakings, receipts, discharges, inventories and accounts and all mariner of Court documents, arbitration documents and official petitions and applications and returns.

13. To sub-delegate or appoint other attorney/s as deemed fit.

This Power of Attorney is effective from 01st April 2022 and will remain valid till 31st March 2023 or till the Attorney/s remain in employment of the Company, whichever is earlier.

IN WITNESS whereof this Power of Attorney is signed by the below mentioned Directors of the Company who have been authorised in this behalf vide Board Resolution dated 03rd February 2022, on this 01 day of April 2022.

For **Tetra-Pak India Private Limited**

Ashutosh Manohar
Managing Director

Uday Chouhan
Director

Witness:

1. Anil
Name: Anilkumar Moosad
Designation: Legal Executive

2.
Name: VISHAL KULKARNI
Designation: Indirect Tax - Manager.

IDENTIFIED BY
Sign :
Add :
Mob :

BEFORE ME
01/04/2022
MAHENDRA B. KAKAD
ADVOCATE & NOTARY
GOVERNMENT OF INDIA
01 APR 2022

ANNEXURE R12/2

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Tetra Pak®
PROTECTS WHAT'S GOOD

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED IN THE MEETING OF BOARD OF DIRECTORS OF TETRA-PAK INDIA PRIVATE LIMITED HELD ON THURSDAY, 03rd FEBRUARY 2022 AT 11:00 A.M. AT THE RESGISTERED OFFICE OF THE COMPANY SITUATED AT CHAKAN PUNE AT WHICH PROPER QUORUM WAS PRESENT:

"**RESOLVED THAT** the Company do hereby nominate, constitute and appoint Ms. Ambalika Rana, Finance Director and Mr. Sharad Chandra Sharma, Head of Legal Affairs, South Asia Markets to be the true and lawful Attorney/s in fact and at law, to act for and on behalf of the Company, severally, in the matters referred to in the draft Power of Attorney laid before the Board.

RESOLVED FURTHER THAT the Power granted to the said Attorney/s will be effective from 01st April 2022 and shall remain valid till 31st March, 2023 or till the Attorney/s remain in employment of the Company, whichever is earlier.

RESOLVED FURTHER THAT Mr. Ashutosh Manohar, Managing Director and Mr. Uday Babusingh Chouhan, Director be and are hereby, jointly, authorized to sign the Power of Attorney."

For **TETRA PAK INDIA PRIVATE LIMITED**

SUNIL RAJARAM TEMBE

Digitally signed by SUNIL RAJARAM TEMBE
Date: 2022.03.30 12:52:26 +05'30'

Sunil Tembe
Company Secretary
Membership no A7772

Tetra Pak India Private Limited
CIN: U21014PN1987PTC012926
Corporate Office: 15th Floor, One Horizon Center, Golf Course Road, DLF Phase 5, Sector-43, Gurgaon – 122002 (Haryana)
Telephone: +91 124 4124600, 2565630 Fax: +91 124 4064308
Regd. Office: Plot No. B -53, MIDC Chakan, Phase – II, Village Vasuli, Tal. Khed, Dis. Pune - 410501
Telephone: +91 2135 678101 Fax: +91 2135 661801

ANNEXURE R12/3

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Item No. 02 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 15/2014

(With reports dated 12.10.2020, 30.08.2020, 14.02.2020, 12.10.2020 and 12.11.2020)

Him Jagriti Uttaranchal Welfare Society Applicant

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 08.01.2021

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SHEO KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

Applicant: Mr. Ritwick Dutta, Advocate
Respondent(s): Mr. K.K. Singh, Advocate for MoEF&CC
Mr. Raj Kumar, Advocate for CPCB
Mr. Rishikant, Advocate for DGHS
Mr. Suransh Choudhary, Advocate for FSSAI
Ms. Deepika Nandakumar, Advocate for BIS

ORDER

1. Issue for consideration is restriction on use of plastic bottles and multi layered plastic packages for packaging of carbonated soft drink, liquor and other items, in view of the adverse impact of such packaging on the environment and public health.

2. Vide order dated 14.10.2019, the Tribunal considered the report dated 30.08.2019 by the Expert Committee comprising the Food Safety and Standards Authority of India (FSSAI), Bureau of Indian Standards (BIS), Central Pollution Control Board (CPCB) and Directorate General of Health Services (DGHS) suggesting an action plan with 12 specific points, after considering the areas of concern on the subject. The

Tribunal also noted the steps taken by FSSAI. The relevant extracts from the said order are as follows:-

> *"2. The matter was last dealt with by this Tribunal vide order dated 31.05.2019. After taking note of the Notification dated 24.12.2018, issued by the Ministry of Health and Family Welfare under Section 92 of Food Safety and Standards Act, 2006, Food Safety and Standards (Packaging) Regulations, 2018 and the Food Safety and Standards (Labelling and Display) Regulations, 2018 regulations,* ***the Tribunal constituted an Expert Committee comprising of the representatives of FSSAI, BIS, CPCB and DGHS*** *to consider whether any further regulatory provisions are required on the subject of restrictions on the packaging by use of plastic material and if so to what extent. The Nodal agency for coordination was the FSSAI.*
>
> *3. Accordingly, a report dated 30.08.2019 has been filed by the Expert Committee. The Committee noted following key areas of concern:*
>
> *"1) Continued use of multi polymer plastic (MPP) or multi layered plastic (MLP) with associated difficulties in its recycling.*
> *2) Increasing use of small packages such as bottles used for beverages, sachets, pouches which are not viable to collect and recycle.*
> *3) High capital cost involved in the presently available techniques in recycling plastics.*
> *4) Inadequate reach of Extended Producer Responsibility (EPR).*
> *5) Non availability of economically viable substitutes to the plastics.*
> *6) Lack of consumer awareness for proper disposal of plastics and litter management.*
> *7) Absence of joint regulatory mechanism with respect to plastic waste management."*
>
> *It proposed a systematic action plan with 12 specific points as follows:*
>
> *"(A) Manufacturer / User Industries of Plastic Packaging Materials.*
>
> *(1) Institute concept of 'plastic footprint': What gets measured is managed. Therefore, in order to encourage businesses to reduce use of plastics through innovation and redesigning of their packaging, a system of quantifying the use of plastics per unit of final product (say kg of plastic used in 1000 kg/kiloliter of final product) may be put in place. A deflator or inflator may be used for use of recyclable plastics, biodegradable/compostable plastics or multilayered plastic as the case may be. A system of periodic assessments of plastic footprint for each product category may be done. In food and beverages, these*

categories could include confectionery and bakery products (biscuits, ice-creams, bakery products and chewing gum), namkeens (chips, namkeen, nuts/peanuts), instant noodles and cereals, beverages (cold drinks, juices, energy drinks and hot drinks) and dairy products (milk, paneer, yoghurt and flavoured milk). Plastic footprint for each category may be benchmarked with the market average of use of plastic. This would encourage companies to adopt packaging reduction strategies that may include reducing weight of packaging, eliminating unnecessary packaging, using lightweight packaging materials, optimizing packaging size and use of recyclable (compostable) and reusable packaging material. Through a system of recognition, rewards and perhaps eventually penalties, it is hoped that the companies would work towards continuous reduction of plastics, product by product and enable businesses to demonstrate their commitment to safer environment.

(2) *Discourage small pack sizes: Lighter, portable, and cost-effective nature of single serve sachets/pouches/bottles continues to make them an attractive proposition for the low-income consumers as well as young and active millennials. Smaller pack sizes/single serve packaging also have brought better quality and premium products affordable to all the sections of the society. But on the other hand it constitutes to the major plastic waste and litter, as their collection is economically non-viable. Hence, in consultation with Legal Metrology Dept. the small pack sizes such as small water bottles, pouches, cups which constitute a considerable amount of plastic waste may not be allowed.*

(3) *Reducing plastic content in multi-layered plastic (MLP): Ideal packaging materials had been tailored by combining different material with customized functionality to sufficiently protect sensitive food products and thus obtain extended shelf life. Latest feasible techniques and technologies may be employed to cut down the use of multiple polymers/plastics. More research in this area is required to be done by scientific institutions. Use of Single polymer/layer recyclable packaging materials shall be encouraged in this case.*

(4) *Encourage alternatives to plastics: Bio-plastics and biodegradable plastics like Poly Lactic Acid (PLA) made from fermented plant starch etc. can be a sustainable alternative to conventional plastics. However there are limitations with the availability of resources for such material. More research in the area to reduce the cost of PLA is required to be done. There is also need to create awareness on biodegradable, compostable or bio-based plastics since their degradation requires conditions like appropriate temperature, light, hydration and/or microbial presence. Hence these have to be separately marked and disaggregated. In case, the biodegradable &compostable or bio-based plastics remain unsegregated and go in landfills just like that, it is*

unlikely to meet these conditions and serves no purpose. Existing packaging systems of paper based cartons with minimal plastics as coatings, composite and reusable containers made up of glass, tin, metal and paper maybe promoted as replacements. A list of alternatives to plastic packaging materials as suggested by Centre for Science and Environment (CSE) is at Annexure-2.

(5) *Effective Extended Producer's Responsibility (EPR) framework: The current Plastic Waste Management Rules mandate the "producer of packaging products and branded consumer goods to dispose plastic packaging waste generated due to their business activities". Even though the policy framed under these rules is fairly good but it has been confined to selected few big businesses. It is understood that National Framework on EPR for plastic waste management is being finalized. The framework may consider a system of monitoring as well as penalty provision for its non-compliance may be explored. The companies may be encouraged to use their downstream supply chain of distribution and retail for collection and aggregation of plastics for recycling. This may be quite easy in direct selling entities that use multi-layered marketing, distribution networks.*

(B) *Final consumers/Users of plastic packaged articles and food stuff.*

Establishments, agencies, institutions, organizations including government/nongovernment, food/non-food operators such as roadways, railways, airlines, schools, colleges and university campuses, E-commerce groups, corporate campuses, hotels, marriage, banquet and community halls under this head shall take-up responsibilities on the following;

(6) *Eliminate/Ban single use plastics: should eliminate and prohibit the usage of single serve/use plastics within their ecosystems. Recent ban by the Parliament and Indian railways is worth emulating.*

(7) *Alternatives to plastics: They shall encourage the use of reusable and recyclable environment friendly alternatives such as jute and cloth bags, bamboo and wooden cutlery, leaf based plates, glass and metal containers etc.*

(8) *Improved Litter Management: They should take up the responsibility of collecting all the waste in their campuses, sorting out dry and wet waste. They could also encourage their staff, teachers and students to bring such plastic waste from homes and help in collection and aggregation of such waste by tying up with businesses in plastic recycling. Dry waste can be segregated into recyclable and non-recyclable and accordingly processed. Wet waste may be sent to composting, which can be done in-house. This activity could be made a part of the social responsibility system.*

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(9) *Better Plastic Disposal: Initiatives are to be taken up, to dispose plastic waste by forming groups/clusters to set up/identify energy recovering systems such as incineration and pyrolysis. Getting adequate quantities of suitable plastics waste is seen as most important factor in success of such units. More organized efforts and encouragement is required for this proper disposal.*

(C) *Municipal bodies/other organizations promoting circular economy.*

(10) *All municipal bodies must be made responsible for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste either on its own or by engaging agencies or producers as mentioned in the Plastic Waste Management Rules.*

(D) *Citizens and consumers.*

(11) *Citizens, especially the socially engaged ones living in urban areas with wide access to information, have adopted more environmentally conscious consumption habits oriented toward recycling, reusing and composting the waste that derives from their domestic consumption. This segment of socially discerned consumers, appreciate brands that demonstrate a commitment to environmental sustainability. A more intensive public campaign, however, is needed to mainstream this kind of behavioral change to a wider public segment. Further approach of incentivizing the customers can also be explored to encourage them for plastic waste management.*

(E) *Science and Research Institution.*

(12) *Science and research institutions must be encouraged for working in the direction of developing environmental friendly packaging materials and plastic waste management systems which can be used on commercial basis. Start-ups may also be encouraged to work in this area. For the food and beverages sector, FSSAI may create a group of institutions and experts to coordinate new work in this area with leading institutions like the Indian Institute of Packaging, CIPET, IIT Delhi, IIT Guwahati, Indian Institute of Toxicological Research (IITR), National Chemical Laboratory, Pune and others."*

4. *The Committee further noted that these are not only environmental issues but also public health issues. In that view of the matter, FSSAI has taken steps to reduce the use of plastic in packaging of foods and beverages as follows:*

"(1) *FSSAI has decided to permit use of liquid nitrogen dosing in PET bottles during the packaging of drinking*

water. This would help in strengthening the bottle thereby facilitating the manufacture with the use of bottles with lower wall thickness.

(2) FSSAI has initiated the process of removing the restriction on the use of returnable bottles for packaging of artificially sweetened beverages.

(3) FSSAI is promoting the use of bamboo as an alternative to plastics such as straws, plates, bowls, cutlery etc.

(4) Allow and enable hotels to keep in-house packed glass bottles in place of plastic bottles in hotel rooms."

5. *The FSSAI has also established a separate 'Scientific Panel on Packaging and Food Contact Materials'. The Committee thereafter made following specific recommendations on regulatory aspects:*

"(1) Food Safety and Standards (Packaging) Regulations, 2018: To review the limits of heavy metals in PET and fix the limits of specific migration limits of Antimony and DEHP (Diethylhexyl-phthalate). In addition to this also explore the possibility of setting limits for Cadmium and chromium.

(2) Food Safety and Standards (Packaging) Regulations, 2018 and IS 14543 (Packaged Drinking water): To remove the restriction on the use non-transparent bottle for drinking water to enable businesses to explore the possibilities of use of alternatives other than the PET currently in use.

(3) Food Safety and Standards (Packaging) Regulations, 2018; IS 14534 (Guidelines for Recycling of Plastics); and Plastic Waste Management Rules, 2016: The European Food Safety Authority (EFSA) permits the use of recycled PET in food packaging under certain set protocols. EC recommends to explore the possibilities for removal of ban on use of recycled plastic in food packaging after a scientifically validated method of pre-cleaning of plastic waste is developed to ensure that the final product using recycled material does not pose any health risk.

(4) Legal Metrology (Packaged Commodities) Rules 2011: To explore the possibilities of restricting small packs of commodities such as water, shampoo, sauce, pickle etc."

6. *On the subject of review and monitoring, the Committee observed:*

"8. The Expert Committee noted that while regulatory provisions for restrictions on the packaging by use of plastic material are mostly in place, there is lack of coordinated approach and implementation of these provisions is poor. It suggested putting in place sector-specific mechanisms to review and monitor the use of plastics in packaging and commitment of businesses under 'Extended Producer Responsibility (EPR)' framework, managing plastic footprints, and related

issues. In this, sector-specific regulators such as FSSAI (for food and beverage packaging), CDSCO (for drugs and cosmetics packaging), Ministry of Textile (for textile packaging) etc. and the Central Pollution Control Board (CPCB) could work together to ensure better coordination. Related ministries and the Ministry of Housing and Urban Affairs and Department of Drinking Water and Sanitation could also be associated for better coordination with Swachh Bharat Mission."

7. In view of the above report, we direct FSSAI, BIS, CPCB, DGHS and MoEF&CC to take further follow up action based on the above report within three months and furnish an action taken report before this Tribunal by e-mail at judicial-ngt@gov.in before the next date."

3. Thereafter, the matter was taken up on 28.07.2020 but no action taken report was filed by FSSAI, BIS, CPCB and DGHS. Only report filed by the Ministry of Environment, Forest and Climate Change (MoEF&CC) on 14.02.2020 was that the issue of single use plastic was referred to the Committee of Secretaries which was yet to take further decision.

4. The matter was thereafter considered on 10.09.2020 and after noting that no further report had yet been furnished, the Tribunal directed furnishing of action taken report by the FSSAI, DGHS, MoEF&CC, the CPCB and the BIS. It was made clear that no individual party was required to be heard as the Tribunal was to consider remedial action taken by the statutory authorities as per law and individual parties were free to take remedies against such action, if they were aggrieved.

5. Accordingly, reports have been furnished by the CPCB, BIS, FSSAI, MoEF&CC and DGHS which we may refer seriatim.

6. Report of the CPCB dated 12.10.2020 mentions the steps taken which are as follows:

" xxx xxx xxx

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2.1 Registration of Brand Owners/Producers:

CPCB has issued registration to 162 Brand-Owners (BO) and 4 Producers under provisions of Plastic Waste Management Rules, 2018 having total Extended Producer Responsibility (EPR) target for collection and disposal of approx. 7 Lac TPA plastic waste.

2.2 Directions to SPCBs/PCCs:

Directions under Section 5 of Environment (Protection) Act, 1986 have been issued to all SPCBs/PCCs for identification of the Brand owners/ producers who are operating without Registration from SPSB/PCC/ CPCB in their State/UT and to take action against the defaulting units as per provisions of PWM Rules, 2018 which shall include closure of their operations, and levying Environmental Compensation. List of Brand owners whose application for registration with CPCB is pending with applicants for long and are non-compliant during this period has also been forwarded to SPCBs/PCCs for necessary action.

2.3 Show Cause Notices for Closure of operations & Levying Environment Compensation:

CPCB has issued Show Cause Notices to 6 Brand Owners/Producer (namely Mis. Bisleri International Pvt. Ltd., Mis. Hindustan Coca Cola Beverages Pvt. Ltd., M/s. Pepsico India Holding Pvt. Ltd., M/s. Flipkart Private limited, M/s. Patanjali Peya Pvt. Ltd. and M/s. Nourish Co. Beverages (Limited) for non-compliance of Provisions of PWM Rules, 2018 in October,2020.

3.0 Institute Concept of Plastic Foot Print:

The concept of Plastic Foot Print was discussed during Expert Committee meeting in August 2020 and concerned industries were identified (Annexure-8). However, CPCB has not received any data on subject matter from the industry /FSSAI as stated against actionable point no.1 of last report dated 15-2-2020. The subject matter is also not addressed in PWM Rules,2018. FSSAI may provide further details/requisite data on the matter to CPCB for consideration."

7. The issue of compliance of Plastic Waste Management Rules, 2016 including the Extended Producer Responsibility (EPR) is being dealt with by separate order today in Execution Application No. 13/2019 in OA 247/2017, *Central Pollution Control Board v. State of Andaman & Nicobar & Ors.* alongwith OA 997/2019, *Aditya Dubey (Minor) v. Amazon Retail India Private Limited & Ors.*, OA 28/2020, *Aditya Dubey (Minor) through his Legal Guardian Mrs. Anu Dubey & Anr. v. Coca-Cola india Pvt. Ltd.*

(CCIPL) & Ors., OA 29/2020, *Avani Mishra v. Union of India & Ors.* and OA 42/2020, *Shubham Khatri v. Union of India & Ors.* The present matter is limited to restricted use of plastic in packaging of liquids. The reports filed to some extent go beyond the scope of the present matter but we notice the reports as filed but will deal with the specific issue of restrictions on use and safeguards in the interest of health.

8. The report of the BIS filed on 30.08.2020 gives the status of action taken by the FSSAI and BIS in relation to Expert Committee recommendations dated 15.02.2020 in terms of order of this Tribunal dated 31.05.2019. The status has been given as follows:

> ***"STATUS:***
>
> ***a) Indian Standards published by BIS:***
>
> *BIS has published the following Indian Standards which may be used as alternatives to plastics:*
>
> *i) IS/ ISO 17088:2012 Specifications for Compostable Plastics*
> *ii) IS 1107:1986 Aerated water glass bottles crown finish type*
> *iii) IS 11984:1986 Glass bottles for free flowing liquids*
> *iv) IS 14407: 1996 Aluminium cans for beverages – Specification*
>
> ***b) Formulation of new Indian Standard:***
> *The following subjects were identified for the formulation of Indian Standards as alternatives to plastics:*
>
> ***i) Indian Standards on 'Paper based multilayer composite carton for processed liquid food products'.***
>
> *Draft Indian Standard on 'Paper based multilayer composite carton for processed liquid food products' has been issued into Wide Circulation with last date of comment 22/01/2020. Comments received on the draft were discussed in the meeting of Paper based Packaging materials Sectional Committee, CHD 16 held on 21-08-2020. Based on the deliberation held during the meeting, it was decided that the concerned panel CHD 16 : P 5 would redraft the document which would again be sent into wide circulation after obtaining the approval of the Chairman, CHD 16.*
>
> ***ii) Indian Standard on 'Compostable plastics bottles/ containers for the Packaging of Natural Mineral Water and Drinking Water'.***

During 29th Meeting of Plastics Packaging Sectional Committee (PCD 21) held on 06 Dec 2019, the Committee considered the Hon'ble NGT order dated 14/10/2019. Further, the Committee noted that this a new type of material for packaging purposes and to know about the characteristic of the material and product, manufacturers of the bottle/ experts should be invited in the next meeting for representation/ discussion.

c) ***Amendment to IS 14543:2016 'Packaged Drinking Water (Other than Packaged Natural Mineral Water) and IS 13428:2005 'Packaged Natural Mineral Water'.***

The Drinks & Drinking Water Sectional Committee, FAD 14 in its 27th meeting held on 03/12/2019 took note of the directions of the Hon'ble NGT order dated 14/10/19 in the matter to remove the restriction on the use non-transparent bottle for drinking water to enable businesses to explore the possibilities of use of alternatives other than the PET currently in use.

The Committee was of the opinion that the transparency requirements are prescribed in the FSSAI's Packaging Regulations and decided that appropriate amendments to IS 14543 as well as IS 13428 may be issued for printing/ publication by BIS directly by waiving-off wide circulation (considering harmonization with the National Regulations and compliance to the directions of the Hon'ble NGT on the matter) as soon as a notification to this effect is issued by FSSAI.

The Committee further decided to recommend that alternative food-grade packaging materials (such as Paper Based Multilayer packaging, metal cans, etc.) suitable for drinking water may be considered for incorporation in IS 14543 & IS 13428 after the above developments take place.

FSSAI had issued Directions dated 07th Feb 2020 under Section 16 (5) of Food Safety and Standards Act, 2006 regarding operationalization of Food Safety and Standards (Packaging) Amendment Regulations, 2020 relating to Specific Migration Limits of Antimony and DEHP and Packaging of Drinking Water. The para 2 (1) of the said draft regulations state that 'Other food grade packaging materials compatible with the water to be packaged may also be used. In such cases, requirement of transparent bottle would not apply'. FSSAI was requested by BIS to further clarity on para 2 (1) of the said draft regulations for 'Other food grade packaging materials compatible with the water....' w.r.t. its mode of implementation, testing/ verification and enforcement before the same could be considered for amendments in IS 14543 & IS 13428. Based on the response received from FSSAI on the matter vide their mail dated 08 July 2020 the following was elucidated:

a. *The amended/ revised sub-regulation (4) of Regulation (4) of Food Safety and Standards (Packaging) Regulations,*

2018 pertains to Plastic materials intended to come in contact with food products.

b. *In this case, the 'other food packaging material' may include the following:*
   i) *Paper-based Multilayer packaging with plastic as primary food contact layer with water*
   ii) *Biodegradable and compostable plastics*

c. *The testing of such materials may be done as per the existing BIS standards/ methods which are followed for testing for conventional plastics excluding transparency and physical properties. Biodegradability and composability tests may be done additionally in case of Biodegradable/ compostable plastics.*

d. *The size/ capacity of such materials may be considered accordingly.*

The draft amendments to these ISs would be taken up with the FAD 14 Committee for deliberations.

2) Food Safety and Standards (Packaging) Regulations, 2018; IS 14534 (Guidelines for Recycling of Plastics); and Plastic Waste Management Rules, 2016: *The European Food Safety Authority (EFSA) permits the use of recycled PET in food packaging under certain set protocols. To explore the possibilities for removal of ban on use of recycled plastic in food packaging after a scientifically validated method of pre-cleaning of plastic waste is developed to ensure that the final product using recycled material does not pose any health risk* ***[Action to be taken up by the - FSSAI&BIS]****.*

STATUS:

BIS has published IS 16630 (Part 1): 2018 'Plastics- Post Consumer Poly Ethylene Terepthalate PET Bottle Recyclates Part 1 Designation System and Basis for Specifications'.

This standard establishes a designation system for post-consumer poly (ethylene terephthalate) (PET) bottle recyclates, which may be used as the basis for specifications. This standard is applicable to all PET bottle recyclates. It applies to material ready for normal use in the form of powder, flakes or pellets.

However, BIS will participate in the development of a processes, which may be used to produce recycled PET intended for food packaging applications by FSSAI.

Further, IS 14534:2016 'Plastics — Guidelines for the Recovery and Recycling of Plastics Waste' will be amended after removal of ban on use of recycled PET in food packaging by MoEF&CC and FSSAI."

9. The report of the FSSAI filed on 14.02.2020 mentions the steps taken by the MoEF&CC for regulation and recycling of plastic. It is stated that "Standard Guidelines for Single-Use Plastic" have been issued on

21.01.2019 for improving the waste management and prohibiting Single-Use Plastic (SUP). Instructions were issued to Chief Electoral Officers during General Elections 2019 to phase out SUP. Instructions were also issued to Ministries, Department, offices under the jurisdiction of the Governments. Regional offices, Schools, Corporates, Major PSUs, Institutions in 2018 & 2019 to prohibit SUP products including water bottles, take away coffee cups, lunch wrapped in disposable plastic packaging, plastic bags, disposable food containers, plates and containers made of polystyrene foam, plastic straws etc. from their offices. Provision has been made for proper regulation and sound recycling of plastic, provisions have been made for registration of all plastic recyclers with respective State/UT Pollution Control Boards/Committees. Every Urban Local body has been made responsible for setting up of infrastructure for collection, segregation and processing, including recycling and disposal of plastic waste. The local bodies have also been mandated to create awareness among all stakeholders about their respective responsibilities. The Rules mandate the producer, importers and brand owners to work out modalities for waste collection system based on the principle of Extended Producers Responsibility involving the State Urban Development Departments. The Rules further mandates the Producers, Importers and Brand Owners for collection of used multi-layered plastic sachet or pouches or packaging, who introduces such products in the market. The Rules prescribe them to establish a system for collecting back the plastic waste generated due to their products. The State Governments have also issued their own instructions to ban SUP items to encourage alternate use of plastics i.e. compostable plastic, oxo-biodegradable plastics, the Ministry has requested CIPET & CPCB to carry out studies on SUP. Department of

Chemicals and Petro Chemicals conducted a study on Single Use Plastic. As per the draft report submitted by the Expert Committee to DCPC (CIPET report), single use plastic items were categorized based on a logical process. This categorization resulted in a group of SUP items being identified as having serious environmental impacts. The most common single-use plastics found in the environment are plastic drinking bottles, plastic bottle caps, food wrappers, cigarette butts, plastic carry and grocery bags, plastic lids, straws and stirrers, other types of plastic bags, and foam take-away containers. These are the waste products of a throwaway culture that treats plastic as a disposable material. The environmentally problematic products with low utility value and high environmental impact were identified. Considering the high environmental costs associated with management of single-use plastics, particularly the adverse effect on marine environment, and the need for a definitive response supplementing actions undertaken by various States/UTs to combat single-use plastic pollution, it is proposed that a prohibition on the manufacture, use, sale, import and handling of single-use plastic products may be introduced at the Central level. However, a comprehensive list of all Single use plastic items, with even a narrow definition of Single Use Plastic would be very large and could encompass a major portion of all economic activities in the country. It may not be feasible to impose a comprehensive ban on all SUPs. Therefore, it shall be prudent to identify list of SUP items which have the least 'Utility' and the Most Environmental Impact', to prohibit. This could be introduced by 2022. The matter regarding banning of Single Use Plastic is being discussed in the meeting of Committee of Secretaries (COS) at the apex level at Cabinet Secretariat on the measures taken by the MoEF&CC and its line Ministries. It is pointed out during the hearing that with regard to

packaging of water, carbonated soft drinks, beverages and other consumable food/drink items, FSSAI has issued direction under Section 16 (5) of Food Safety and Standards Act, 2006 dated 07th February 2020 regarding operationalization of Food Safety and Standards (Packaging) Amendment Regulations, 2020 relating to Specific Migration Limits of Antinomy and DEHP and Packaging of Drinking Water. Therein, it is stated that the draft regulations were in the process of being finalised under section 92 of the Food Safety and Standards Act, 2006.

10. The report of the MoEF&CC dated 12.10.2020 which practically repeats the contents of the report of the FSSAI already quoted above.

11. The report of the DGHS dated 12.11.2020 filed in the form of additional affidavit of the Joint Drug Controller (India), Central Drug Standard Control Organization, Directorate General of Health Services, Ministry of Health and Family Welfare, Govt. of India. The relevant extracts from the report are:

> *"1. xxx xxx xxx*
> *2.* ***A representation was received from the Him Jagriti, to impose a complete ban on usage of PET bottles (both coloured and uncolored) as primary packaging material in pharmaceutical liquid orals, suspensions and dry syrups was considered by Drug Technical Advisory Board (DTAB) a statutory body under the Drug and Cosmetics Act, 1940. Subsequently, Ministry of Health and Family Welfare published draft rules vide Gazette Notification No. G.S.R 701 (E) dated 29.09.2014 for prohibition of use of Polyethylene Terephthalate or plastic containers in liquid oral formulations for primary packaging of drug formulations for pediatric use, geriatric use and for use in case of pregnant women and women of reproductive age group.***
>
> *3. That in view of the large number of objections and suggestions from various stakeholders on said draft rules* ***the Ministry of Health and Family Welfare constituted a high-level committee under the chairmanship of Prof. M.K Bhan, the former Secretary, DBT, to review the safety of Polyethylene terephthalate (PET) and its containers for the packaging of pharmaceuticals.***

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4. *It is respectfully submitted that this Hon'ble Tribunal in its order dated 14.10.2019, considered the report dated 30.08.2019 of the expert committee comprising FSSAI, BIS, CPCP and DGHS to consider whether any further regulatory provisions are required on the subject of restrictions on the packaging by use of plastic material and if so to what extent. Further the Hon'ble court in view of the report, directed to take further follow up action based on the said report and furnish an action taken report before the Tribunal.*

5. *It is respectfully submitted that for compliance of this Hon'ble Tribunal order dated 14.10.20191 FSSAI had requested the concerned agencies/ departments including CDSCO vide Letter No. 1-95/stds/Misc/SP (L&C/A)/FSSAI-2015(pt-4) dated 05.11.2019 to initiate necessary action and accordingly to submit an Action taken report to FSSAI so that same could be compiled and submitted to the Hon'ble NGT by them.*

6. ***It is respectfully submitted that on the basis of the recommendations of the M. K. Bhan committee, Indian Pharmacopoeia Commission, MoH&FW, Ghaziabad has examined the issue through an expert Committee under the Chairmanship of Prof. Y. K. Gupta, former Head of Dept. of Pharmacology, AIIMS, New Delhi, and revised the Chapter on "Primary Packages for Pharmaceutical Articles" and same has been published in Volume-I, Page No.-1019 of 8th Edition of Indian Pharmacopoeia (IP), 2018. It includes standards of PET (Polyethylene terephthalate) as well as standards of other polymers/plastic containers and primary packaging of pharmaceuticals. Labels of on the containers are also revised to meet the requirements of Drug and Cosmetics Act, 1940 and Rules made there under.***

A copy of Volume-I, Page No.-1019 to 1060 of 8th Edition of Indian Pharmacopoeia (IP), 2018 is annexed and marked as Annexure-Al.

7. ***It is respectfully submitted that accordingly the "Chapter 6. Primary Packages for Pharmaceutical Articles" of the IP has been harmonized at par with global Pharmacopoeias for ensuring safe use of plastics for packaging of pharmaceuticals.***

8. ***Accordingly, CDSCO had submitted the Action taken report in respect of use Plastics for packaging of Pharmaceuticals to the FSSAI vide Letter No. 29/Misc./38/2019-DC dated 27.01.2020, comprising the reply received from Indian Pharmacopoeia Commission, MoH8LFW, Ghaziabad, as to "whether any further regulatory provisions are required on the use of plastics for packaging of pharmaceuticals, after the steps already taken, and if so, to what extent*** *(copy attached).*

A copy of letter dated 27.01.2020 is annexed and marked as Annexure-A2.

9. *It is respectfully submitted that manufacture, marketing & sale of Drugs are regulated under the provisions of Drugs and*

Cosmetics Act, 1940 and Rules made there under. Good manufacturing Practices and requirements of premises, plant and equipment for manufacture of Pharmaceutical products are specified in Schedule M to the Drugs and Cosmetics Rules, 1945.

10. ***As per the Schedule M to the said rules, all containers and closures intended for use shall comply with the Pharmacopeia and other specified requirements. Suitable sample sizes, specifications, test methods, cleaning procedures and sterilization procedures, shall be used to assure that containers, closures and other component parts of drug packages are suitable and are not reactive, additive, adsorptive or leachable or presents the risk of toxicity to an extent that significantly affects the quality or purity of the drug. No second hand or used containers and closures shall be used. Pharmaceutical manufacturers are required to follow the Standards laid down in Indian Pharmacopoeia."***

12. Thus, revision of Indian Pharmacopoeia (IP) Chapter 6, for standards of plastic containers and primary packaging of Pharmaceutical Articles stands carried out. It includes standards of PET (Polyethylene Terephthalate) as well as standards of other polymers/plastic containers and primary packaging of pharmaceuticals.

13. We have heard learned Counsel for the applicant as well as the CPCB, BIS, FSSAI, MoEF&CC and DGHS and given due consideration to the issue involved.

14. Learned Counsel for the applicant has referred to submissions filed on 20.03.2020 and 13.10.2020 by way of objections to the reports of the above referred authorities. It is submitted that the main concern is health consequences from the use of plastic for packaging and not with the management of plastic packaging as waste. The said issue has still not been addressed by the authorities. Heavy metals and plasticizers like DEHP are present in plastic beyond prescribed limits which is detrimental to the health. Thus, use of plastic packaging including polyethylene phthalates (PET) bottles and multi-layer packs such as Tetra packs has to be banned particularly for packaging of carbonated

soft drink and liquor and gradually for all non-essential items also. The applicant has referred to reports highlighting adverse consequences on health, i.e. draft notification published by the Ministry of Health and Family Welfare on 29.09.2014, report published by the Indian Council of Medical Research, report published by the Indian Institute of Toxicology Research, report submitted by the All-India Institute of Hygiene and Public Health, Drugs and Technical Advisory Board and National Test House. The report of the ICMR has noted that PET bottles should not be used for drugs meant for use of vulnerable groups such as pediatric age group and for pregnant women. It was further submitted on behalf of the applicant that the standards imposed by FSSAI for antimony and DEHP are not in consonance with National or International Standards. The Expert Committee has erroneously classified tetra-based packaging as 'paper-based packaging' despite the fact that out of the 6/7 layers, 4 layers are plastics. The first and second layers, which come in contact with the food products, are plastic and the outer most layer which comes in contact with food is also plastics (so it is effectively a multi layered plastic packaging instead of paper packaging). In the note filed on 13.10.2020, the applicant has further stated that as per findings of the Indian Institute of Toxicology Research (IITR), there is migration of phthalates, DEHP and additives, which are above permissible limits, as per both Indian and International standards. In view of the said findings, there is need to ban plastic packaging of food and medicinal products to avoid adverse impact on human health. It was submitted that if first layer of packaging in multi-layer packaging involves contact with the food items, leaching cannot be avoided. While it is claimed that tetra packs are 100% recyclable, in actual practice, only 5% of such packaging is recycled. There is huge gap in segregation and collection of such waste as

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against the requirement of doing so. Majority of tetra packaging are ending up in landfills. Similar is the situation in respect of plastic bottles.

15. As against above, learned Counsel for the statutory regulators submitted that the issues have been duly dealt with. Learned Counsel for the DGHS pointed out that the Drugs and Cosmetics Act, 1940 deals with the standards for safe use. Vide Notification dated 29.09.2014, the Ministry of Health has published draft rules for prohibition of use of Polyethylene Teraphthalate or plastic containers in liquid oral formulations for primary packaging of drug formulations for pediatric use, geriatric use and for use in case of pregnant women and women of reproductive age group. Objections were filed against such rules which led to constitution of M.K. Bhan Committee and thereafter Prof. Y.K. Gupta Committee which has led to revision of Chapter on "Primary Packages for Pharmaceutical Articles" published on 24.01.2020. In the process, the said Chapter has been brought in harmony with global Pharmacopoeias for ensuring safe use of plastics for packaging of pharmaceuticals. Schedule M to the Drugs and Cosmetics Rules, 1945 provides for compliance with the Pharmacopeia and pharmaceutical manufacturers are required to follow the same. The containers or other parts of the packaging are required to be suitable and are not reactive, additive, adsorptive or leachable or presenting risk of toxicity to an extent that significantly affects the quality or purity of the drug. No second hand or used containers and closures shall be used. Pharmaceutical manufacturers are required to follow the Standards laid down in Indian Pharmacopoeia.

16. In view of revision of the Pharmacopeia, the adverse health effect of plastic packaging has been regulated to an extent. While further steps may be desirable, the same need to be considered in phases as may be found viable. The matter being required to be primarily dealt with by the concerned Executive authorities, we do not consider it necessary to pass any further order in exercise of jurisdiction under Sections 14 and 15 of the National Green Tribunal Act, 2010. However, it is necessary to ensure that compliance of the norms is duly monitored at appropriate level of the Health Ministry to safeguard the health of the citizens.

17. The issue so far considered appears to deal only with the remedial action against adverse effect of packaging of drugs for vulnerable groups but the issue of use of plastic bottles and multi layered plastic packages for packaging of carbonated soft drinks, liquor and other items also needs to be further considered by the concerned authorities, including the BIS, FSSAI and MoEF&CC. The FSSAI may finalize the draft regulations mentioned in para 9 above as far as possible within three months from today which may be enforced and monitored through a credible monitoring mechanism.

A copy of this order be forwarded to the MoEF&CC, Ministry of Health, FSSAI, BIS, DGHS and CPCB by e-mail for compliance.

The application is disposed of.

Adarsh Kumar Goel, CP

S.K. Singh, JM

Dr. Nagin Nanda, EM

January 08, 2021
Original Application No. 15/2014
DV

ANNEXURE R12/4
97 (Colly.)

ENVIRONMENT DEPARTMENT
15th Floor, New Administrative Building
Madam Cama Road, Mantralaya,
Mumbai 400 032, dated 23rd March, 2018

NOTIFICATION

No.Plastic-2018/C.R. No.24/TC-4.

WHEREAS, concerns about usage and disposal of plastic are diverse and include accumulation of waste in landfills, water bodies and in natural habitats, physical problems for wild animals resulting from ingestion or entanglement in plastic, the leaching of chemicals from plastic products and the potential for plastics to transfer chemicals to wildlife and humans are increasing.

AND WHEREAS, because of non-biodegradable plastic waste handling of municipal solid waste becomes difficult and incurs more financial burden and also due to burning such waste in open environment causes various diseases in humans and animals.

AND WHEREAS, it is observed that non-biodegradable garbage is responsible for clogging drains and nallas causing flood in urban settlement leading to loss of lives and damage to properties and infrastructure.

AND WHEREAS, plastic waste and micro plastic cause danger to marine and freshwater bio-diversity and also hamper ecosystem services due to spreading of such waste in and around ecosystems, on tourists places, beaches and on agriculture and forest areas.

AND WHEREAS, non-biodegradable plastic waste and micro plastic are having negative impacts on fish diversity and fisheries activity.

AND WHEREAS, non-biodegradable waste is posing problems in effective implementation of Clean India Mission.

AND WHEREAS, detailed stake-holders consultations and deliberations with the field level officials were undertaken, and public notices were also published in leading newspapers.

AND WHEREAS, despite the ban on plastic bags of less than 50 micron through Maharashtra Plastic Carry Bags (Manufacture and Usage) Rules, 2006, there is increase in the non-biodegradable plastic garbage waste causing damage to environment and health.

Therefore, in exercise of the powers conferred by Clause (1) & (2) of Section 4 of the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006, the Government of Maharashtra hereby authorises regulations for manufacture, usage, sale, storage, transport of the products made from plastic & thermocol etc. which generates non-biodegradable waste.

1. Short Title and Commencement :-

    1. This may be called the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, Transport, Handling and Storage) Notification, 2018.

    2. This Notification shall come into force with effect from the date of their publication in the Maharashtra Government Gazette.

2. Definitions:

1) "Act" means the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006.

2) "Plastic" means material; which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, vinyl, low density polyethylene, polypropylene, polystyrene resins, poly styrene (thermacol), non-oven polypropylene, multi layered co extruder, poly propylene, poly terephthalate, poly amides, poly methyl methacrylate, plastic micro beads, etc.

3) "Compostable Plastic" means plastic that undergoes degradation by biological processes during composting to yield CO_2, water, inorganic compounds and biomass at a rate consistent with other known compostable materials, excluding environmental petro-based plastic, and does not leave visible, distinguishable or toxic residue, and which shall confirm to the Indian Standard: IS 17088:2008 titled as Specifications for Compostable Plastics, as amended from time to time.

4) "Plastic sheets" means sheet made of plastic.

5) "Plastic Waste" means any plastic discarded after use or after their intended use is over.

6) "Recycling" means the process of transforming segregated plastic waste into a new product or raw material for producing a new products.

7) "Producer / Manufacturer" means person engaged in manufacture or import of plastic bags or multilayered packaging or containers or plastic sheets or like, and includes industries or individuals using plastic sheets or like or covers made up of plastic sheets or sheets or also manufacture products made from plastic or used plastic for packaging or wrapping the commodity.

8) "Commodity" means tangible items that may be brought or sold and includes all marketable goods or wares.

9) "Plastic bags" means bags made from plastic material, used for the purpose of carrying or dispensing commodities which have handle or without handle and also includes bags made from non-woven polypropylene and constitute or form an integral part of the packaging at manufacturing stage or is an integral part of manufacturing.

10) "PET and PETE bottles" means bottles made up of polyethylene terephthalate (PET) and polyethylene terephthalate esters (PETE) used for packaging or storing liquid or semi liquid food, including water.

11) "Commodities made from Thermocol" means any commodity or product made from Thermocol.

12) "Form" means form attached with these regulations.

13) "Product" means anything or object or item made from plastic or Thermocol.

3. Following activities will be regulated in the whole State of Maharashtra in exercise of the powers conferred by section 2(h) , sub-section 1 and 2 of section 4 of the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006.

(1) 1) The ban in the whole State of Maharashtra for manufacture, usage, transport, distribution, wholesale & retail sale and storage, import of the plastic bags with handle and without handle, and the disposable products manufactured from plastic & thermocol (polystyrene) such as single use disposable dish, cups, plates, glasses, fork, bowl, container, disposable dish/ bowl used for packaging food in hotels, spoon, straw, non-woven polypropylene bags, cups/ pouches to store liquid, packaging with plastic to wrap or store the products, packaging of food items and food grain material etc.

2) These regulations are applicable to every person, body of person, government and non-government organization, educational institution, sport complex, clubs, cinema halls and theaters, marriage/celebration halls, industrial units, commercial institutions, offices, pilgrimage organisers, pilgrimages and religious places, hotels, dhabas, shopkeepers, malls, vendors or sellers, traders, manufacturers, caterer, wholesalers, retailers, stockiest, businessmen, hawkers, salesmen, transporters, market, producers, stalls, tourist places, forest & reserved forest, eco-sensitive areas, all sea beaches, all public places, bus stands, railway stations in the State of Maharashtra.

3) There will be ban in whole state for use of plastic and thermocol for decoration purpose.

(2) Use, sale, storage and manufacture of PET or PETE bottles made up of high quality food grade virgin Bisphenol-A free material having liquid holding capacity not less than 0.5 liters and printed on it with predefined buy back price shall be allowed subject to compliance of the following.

PET or PETE bottle manufacturers, producers, sellers and traders under 'Extended Producers and Sellers/Traders Responsibility' will develop "Buy Back Depository Mechanism" with a predefined buy back price printed specifically on such PET or PETE bottles and also set up Collection and Recycling units of adequate capacity and number to collect and recycle such PET or PETE bottles within three months from the date of publication of this notification. Traders / sellers will buy back such used PET/ PETE bottles with predefined buy back price printed on such bottles.

PET / PETE bottles having liquid holding capacity 1 liter or more and of 0.5 liter will be printed on the body of the bottle with predefined buy back price of Rs. 1/- and Rs.2/- respectively. However, there will be ban on usage, purchase, sale, distribution and storage of PET / PETE bottles having liquid holding capacity less than 0.5 liters in the State.

(3) These regulations shall not be applicable to the following items:-

i. Plastic bags or plastic used for packaging of medicines;

ii. Only compostable plastic bags or material used for plant nurseries, horticulture, agriculture, handling of solid waste. However, bags / sheets utilized for this purpose shall be prominently printed on it with "Use exclusively for this specific purpose only". The manufacturers or seller of compostable plastic carry bags shall obtain a certificate from the Central Pollution Control Board before marketing or selling for this purpose.

iii. To manufacture plastic and plastic bags for export purpose only, in the Special Economic Zone and export oriented units etc.

iv. The plastic cover / plastic to wrap the material at the manufacturing stage or is an integral part of manufacturing. Guidelines to recycle or reuse such plastic should be printed prominently on the cover and material.

v. Food grade virgin plastic bags not less than 50 micron thickness used for packaging of milk. However, on such plastic bags used for this purpose, should be clearly printed with the price for buy back which should not be less than Rs.0.50 to develop buy back system for recycling. To develop collection mechanism and ensure proper recycling of such used bags, milk dairies, retail sellers and traders will buy back such used milk bags with predefined buy back price printed on it. Milk dairies, retail sellers and traders will ensure that such buy back mechanism and collection and recycling system shall establish within three months from the date of publication of this regulation. However, Milk Dairy and distributors shall make efforts to develop alternative system with glass bottles or any other environmental friendly material for distribution of milk.

4. The following officers are authorized and empowered for the implementation and to take necessary legal action under powers conferred u/s 12 of the provisions of the Maharashtra Non-biodegradable (Control) Act, 2006, as per their jurisdiction :-

1. 1) Municipal Commissioners, Deputy Municipal Commissioners, Shops & Establishment Officers and Inspectors, Sanitary Inspector, Health Inspector, Health Officer, Ward Officers or any other Officer nominated by the Municipal Commissioner as well as Chief Officers of all Municipal Councils and any other Officer nominated by the Chief Officer are

authorized to implement the provisions of the said Regulations in their respective jurisdiction.

2) District Collector, Deputy Collector, Sub-Divisional Officer, Tahasildar, Talathi and any other officer nominated by Collector, are authorized to implement the provisions of the said Regulations in their respective jurisdiction.

3) Chief Executive Officer, Zilla Parishad; Block Development Officer, Health Officer, Development Officer, District Education Officer, Block Education Officer and Gram Sevak are authorized to implement the provisions of the said Regulations in their respective jurisdiction.

4) Member Secretary, Regional Officer, Sub-Regional Officer and Field Officer of Maharashtra Pollution Control Board, Scientist-I & II and Director, Environment Department, Government of Maharashtra.

5) Director, Health Services; Deputy Director, Health Services; Health Officers.

6) Director, Primary & Secondary Education Board.

7) All Tourism Police, Police Inspector, Police Sub-Inspector, Motor Vehicle Inspector, Traffic Police, Joint Managing Director, Maharashtra Tourism Development Corporation or any other officer authorized by Managing Director, Maharashtra Tourism Development Corporation.

8) Deputy Commissioner (Supply), District Supply Officer

9) Commissioner State Tax and all State Tax Officers.

10) Range Forest Officer or any other officer authorized by Deputy Conservator of Forest.

2. 1) For implementation of these regulations, the person at village or city level, interested persons, group of people, welfare organizations, industrial association and members of all local bodies etc. shall register any offence with the concerned authorized officer, notified in these regulations for this purpose.

2) The said registered person, group of people, welfare organizations, industrial association shall help the officers authorized under the said regulations, for providing information of violation of these regulations and assist such officers to impose fine, to confiscate the material made from plastic & thermocol and assist in registering the offence.

5. Maharashtra Pollution Control Board shall impose the condition on manufacturers indicating that recycling price and buy back price should be prominently printed on PET / PETE bottles and plastic bags permissible under these regulations while issuing consent to establish, consent to operate/ renewal and also to initiate actions on non-complying units or industries under appropriate act.

6. Separate order for levying recycling fees from manufacturers at manufacturing stage and recycling fees at selling point at local body level will be issued in consultation with Directorate of Goods and Services Taxes and with approval of the Empowered committee .

7. Time frame for implementation of these regulation :-

Sr. No.	Stake Holder	Implementation Period	
		Activity	Time Frame
1.	Manufacturer / Producer	Manufacturing and sale of banned items.	From date of notification.
		Disposal of existing stock of banned items by 1) Sale outside the State. 2) Sale to authorized recycler or industry.	One month from the date of notification.

2.	Sellers, Retailers, Traders	Ban on Sale	From the date of Notification
		Disposal of Existing Stock by 1) Sale outside the State. 2) Sale to authorized recycler or industry. 3) Handed over to Local Body for Scientific disposal or recycling; and plastic waste generated under buy back scheme to be handed over to authorized recyclers or to the such mechanism developed for the same.	One month from the date of notification.
3.	Users	Use of banned items.	From the date of Notification.
		Disposal of existing plastic banned items with the individual users by 1) Handed over to Local Body for Scientific disposal or recycling; 2) Sale to authorized recycler or industry.	One month from the date of Notification.
4.	Local Body	To arrange the collection, transportation of banned plastic items or plastic waste of existing stock for recycling to authorized recyclers or industries or scientific disposal.	One month from the date of Notification.

8. Empowered Committee, constituted under the chairmanship of Minister (Environment) shall monitor the implementation of these regulations and will regularly review the incorporation of additional items which generate non-biodegradable garbage including use of PET or PETE bottles to be banned in the State. This committee will also help in resolving any difficulty faced by implementing authorities during implementation and if required also carry out any amendment in these regulations with an aim to reduce the volume of non-biodegradable garbage generation in the State

9. Expert Committee shall be constituted under these regulations which will suggest the recommendations including amendment required, if any in the regulations to the Empowered Committee for effective implementation of the regulations and solutions to reduce the non-biodegradable garbage.

10. Implementing Authorities, shall submit quarterly report in the Form-A to the State Government.

By order and in the name of the Governor of Maharashtra,

SATISH GAVAI,
Additional Chief Secretary (Environment)

FORM-A

(1) Period of Report : From _____ to _____

(2) Name & Address of Enforcing Agency :

(3) Name of the Officers Incharge of enforcement of the aforesaid Rules:

(4) Telephone/Cell No.(Office) :-

(5) E-Mail ID :

(6) No. of cases registered in the jurisdiction for violation:

Jurisdiction	Compounding		3rd Offence	No. of Cases filed in the Court	No.of cases sub-judiced	Amount of fine collected	Remarks
	1st Offence	2nd Offence					0

1. _____

Sub-Total

2. _____

Sub-Total

Grand Total ----------

(7) Details of special drives undertaken for effective implementation of the Rules :-

(8) List of first time offenders and second time offenders.

(9) Details of public awareness programmes conducted by Enforcing Agency in their jurisdiction.

(10) Any other relevant information.

(Signature of the Reporting Authority)

ON BEHALF OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, PRINTED AND PUBLISHED BY SHRI PARSHURAM JAGANNATH GOSAVI, PRINTED AT GOVERNMENT CENTRAL PRESS, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004 AND PUBLISHED AT DIRECTORATE OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004. EDITOR : SHRI PARSHURAM JAGANNATH GOSAVI.

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ENVIRONMENT DEPARTMENT

15th floor, New Administrative Building, Madam Cama Road, Mantralaya, Mumbai 400 032
dated the 11th April 2018.

NOTIFICATION

No. Plastic-2018/C.R.No. 24/TC-4.—WHEREAS, under the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006, for regulating manufacture, usage, sale, storage, transport of the products made from plastic and thermocol etc., the Government of Maharashtra on 23rd March 2018 published the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, Transport, Handling and Storage) Notification, 2018 ;

AND WHEREAS, as per the para 8 of the said notification, for implementation of these regulations and help in resolving any difficulty faced by implementing authorities during implementation and if required also carry out any amendment in these regulations, the Government *vide* Government Resolution dated 22nd March 2018 constituted the Empowered Committee ;

AND WHEREAS, in consultation with plastic manufacturers associations and considering their representations, it was resolved in the meeting of Empowered Committee on 28th March 2018 to make amendments in the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, Transport, Handling and Storage) Notification, 2018 ;

NOW THEREFORE, in exercise of the powers conferred by clause (1) and (2) of Section 4 of the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006, the Government of Maharashtra hereby makes following amendments in Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, Transport, Handling and Storage) Notification, 2018 :—

1. Para 3 (2) shall be read as follows :—

"Use, purchase, sale, storage and manufacture of PET and PETE bottles made up of high quality food grade virgin Bisphenol-A free material and printed on it with predefined buy back price shall be allowed subject to compliance of the following :—

(a) PET or PETE bottle manufacturers, producers, sellers and traders under 'Extended Producers and Sellers/Traders Responsibility' will develop "Buy Back Depository Mechanism" with a predefined buy back price printed specially on such PET or PETE bottles and also set up collection centers, reverse vending machines, crushing machines with linkages established with recycling units, to collect and recycle such PET or PETE bottle, within three months from the date of publication of this notification, at strategic places including malls, multiplexes, hotels, shops, tourist places, beaches, forts, public places etc.

(b) Traders / sellers will buy back such used PET/PETE bottles with predefined buy back price.

(c) PET / PETE bottles having liquid holding capacity of 1 liter or more and of less than 1 liter will have printed on the body of the bottle, the buyback price of Rs. 1 and Rs. 2 respectively.

2. In Para 7 pertaining to time frame for implementation, the word, namely "one month from the date of Notification" shall be read as " three months from the date of Notification".

By order and in the name of the Governor of Maharashtra,

DR. B. N. PATIL,
Director (Environment).

ON BEHALF OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, PRINTED AND PUBLISHED BY SHRI PARSHURAM JAGANNATH GOSAVI, PRINTED AT GOVERNMENT CENTRAL PRESS, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004 AND PUBLISHED AT DIRECTORATE OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004. EDITOR : SHRI PARSHURAM JAGANNATH GOSAVI.

110

ENVIRONMENT DEPARTMENT

15th floor, New Administrative Building, Madam Cama Road, Mantralaya,
Mumbai 400 032, dated the 30th June 2018.

NOTIFICATION

No. Plastic.2018/C.R.No. 24/TC-4. – WHEREAS, under the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006, for regulating the manufacture, usage, sale, storage, transport of the products made from plastic and thermocol etc., the Government of Maharashtra published the Maharashtra Plastic and Thermocol Products(Manufacture, Usage, Sale, transport, handling and Storage), Notification, 2018 on 23rd March 2018, which was amended as per Notification, dated the 11th April, 2018;

AND WHEREAS, as per para 8 of the said notification, for implementation of these regulations and help in resolving any difficulty faced by implementing authorities during implementation and if required also carry-out any amendment in these regulations, the Government Resolution, dated the 22nd March 2018 constituted the Empowered Committee;

AND WHEREAS, the Empowered Committee in its meeting of the held on 30th June, 2018, resolved to make amendment in the Maharashtra Plastic and Thermocol Products(Manufacture, Usage, Sale, transport, handling and Storage), Notification, 2018 ;

NOW, THERFORE, in exercise of the power confirmed by clause (1) and (2) of Section 4 of the Maharashtra Non-biodegradable Garbage (Control) Act, 2006, the Government of Maharashtra hereby makes the following amendment in the Maharashtra Plastic and Thermocol Products(Manufacture, Usage, Sale, transport, handling and Storage), Notification, 2018 :–

1. In Notification, dated the 23rd March 2018, in Para. 2 at Serial No. 14 and 15 the following definitions are inserted :—

(14) "Multi-layered Packaging" means any material used or to be used for packaging and having at least one layer of plastic as the main ingredient in combination with one or more layers of material such as paper, paperboard, polymeric materials, metalized layers or aluminium foil either in the form of laminate or co-extruded structure.

(15) "Paper-Based Carton Packaging using one layer of plastic" means a container for liquid and solid food and beverages (*e.g.* milk, juice, etc.), where the primary constituent material is paper-board and which may have one or more layer of plastic, foil necessary to allow safe and hygienic consumption.

2. In the Notification, dated the 11th April, 2018 after Clause (c) of Para. 1 is substituted as follow and additional clauses (d), (e) & (f) are inserted :—

(*c*) PET / PETE Bottles of Drinking water, having liquid holding capacity of one litre or more, shall be printed on it, the Deposit and Refund Price of Re.1 or buyback price as decided by the Manufacturer. Drinking water PET / PETE Bottles, having liquid holding capacity of less than one litre but more than 200 ml. shall be printed on it, the Deposit and Refund Price of Rs. 2 or buyback price as decided by the Manufacturer.

(*d*) Use, sale, storage and manufacture of drinking water PET or PETE bottles of having liquid holding capacity less than 200 ml. is banned in the State.

(*e*) It is mandatory on the part of the bulk consumers of PET bottles such as hotels, marriage/ party halls, outdoor event locations, offices/institutions shall provide space for collection of plastic waste.

(*f*) It shall be the sole responsibility of the PET Bottle industries to ensure that these bottles are collected from retailers at depository and refund rate or buyback rate and are recycled.

3. In Notification dated 23rd March 2018, Clause 2A is inserted after Clause 2 of Para 3 as follows :—

(1) As per Plastic Waste Management Rules, 2016 issued *vide* 18th March 2016, by the Ministry of Environment, Forest and Climate Change, Government of India, manufacture and use of non-recyclable multi-layered plastic if any, should be phased out in two years' time. Since, the two years' time is over, the Manufacturers should stop use of non-recyclable multi-layered plastic immediately.

(2) The manufacturer/brand owner/producer of recyclable multi-layered and paper-based carton packaging material using one layer of plastic /Manufacturer's Association, shall diligently implement their Extended Producer's Responsibility (EPR) Plan which includes co-ordination / collaboration with existing Rag pickers / Scrap Traders, retailers for collection of plastic waste and its subsequent recycling and final disposal through their own established recycling plant or registered recyclers by establishing Producer's Responsible Organisations(PRO), which shall be responsible for 100% integral Plastic Waste Management right from collection to final disposal.

(3) Extended Producer's Responsibility (EPR) Plan of the manufacturer/brand owner/producer of multi-layered and paper-based carton packaging material using one layer of plastic shall be reviewed after three months from the date of issuance of this notification and on the basis of the outcome of review, further decision will be taken for regulation.

4. **In Clause 3 of Para 3 regarding regulation not applicable to the items mentioned in the Notification dated the 23rd March, 2018, the following items are inserted :—**

(1) In Sr. No. (i), Medical Equipment's and Medical Products are also added in addition to use of plastic for packaging of medicines.

(2) Sr. No. (ii) shall be read as it is.

(3) Sr. No. (iii) shall be read as it is.

(4) Sr. No. (iv) is substituted as follows :—

iv. Plastic material/ thermocol used for wrapping the material at the manufacturing stage or is an integral part of manufacturing shall comply the following conditions :—

a. The packaging material shall be more than 50 micron thickness ;

b. The packaging material shall be made up of minimum 20% recyclable plastic material (except for food packaging);

c. The packaging material (except for export purpose) shall be printed with manufacturer's details, type of plastic with code number and buy-back price ;

d. The manufacturers/ manufacturers' association using material for packaging shall work together and create a buy-back mechanism and diligently implement their Extended Producer's Responsibility (EPR) Plan which includes co-ordination/ collaboration with existing Rag pickers/ Scrap Traders, retailers for collection of plastic waste and its subsequent recycling and final disposal through their own established recycling plant or registered recyclers by establishing Producer's Responsible Organisations, which shall be responsible for 100% integral Plastic waste management from collection to final disposal.

(5) Sr. No. (v) shall be read as it is.

(6) **At Sr. No. (vi) following clause is inserted :—**

vi. Wholesalers and Retailers of groceries and grain products are allowed to sell groceries and grain products in sealed plastic packaging material subject to compliance of following conditions :—

a. The plastic packaging material shall be more than 50 micron thickness with a minimum weight of 2 grams. The packaging material shall be printed with manufacturer's details, type of plastic with code number and buy-back price ;

b. Manufacturing associations for retail packaging material and retailer's associations shall work to create a mechanism for the collection of the plastic through a buy-back mechanism and ensure the recycling and final disposal of the collected plastic materials ;

c. The conditions mentioned above in vi (a) and (b) shall be complied for use and sale of plastic packaging material within a period of three months from the date of issuance of this Notification ;

d. The Manufacturers shall comply with the conditions mentioned at Sr. No. vi (a) and vi (b) from the date of issuance of this Notification.

(7) **At Sr. No. (vii), following clause is inserted :—**

vii. Plastic Packaging material used for products intended for sale in the State of Maharashtra through E-Commerce shall be allowed only for three months, however, they shall develop Environmental-Friendly Alternative for packaging of materials within three months. They shall create a mechanism for the collection of the plastic packaging material used during three months and ensure the recycling and final disposal.

5. In para 4 of the Notification dated the 23rd March 2018, the officers are authorised and empowered for implementation and to take necessary legal action under the powers conferred *u/s* 12 of the provisions of the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, Transport, Handling and Storage) Notification, 2018. In addition to this, after Sr.No.10 the following officers, are authorised.

(11) Any officers nominated by the Railway, Metro, Maharashtra Maritime Board and Airport Authorities.

By order and in the name of the Governor of Maharashtra,

ANIL DIGGIKAR,
Principal Secretary (Environment).

ON BEHALF OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, PRINTED AND PUBLISHED BY I/C DIRECTOR SHRI MANOHAR SHANKAR GAIKWAD, PRINTED AT GOVERNMENT CENTRAL PRESS, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004 AND PUBLISHED AT DIRECTORATE OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004, EDITOR : I/C DIRECTOR SHRI MANOHAR SHANKAR GAIKWAD.

e. (3) Type of plastic products:

"ANNEXURE R-12/5

Industrial packaging ☐	Grocery bags ☐	Milk pouches ☐
Plastic containers ☐	Plastic bottle ☐	MLP ☐
Tetrapack ☑	Composatble plastic bag ☐	

(113)

(f) Manufacturing capacity in MT/day	495
(g) In case of renewal of registration, previous registration no.	NA
(g.1) Registration attachement ?	Choose File No file chosen
In case of renewal of registration, previous registration date	
(h) GSTIN Number	27AAACT3467B1ZK
2.(a) Is the unit registered with DCSSI or Department of industries of the state Government/Union territory Administration	○ No ◉ Yes
(b) If yes, attach a copy	Choose File No file chosen
3.(a) Total capital investment on the project (land, building, plant nad machinery without depreciation)	9194700000
(b) Year of commencement of production	2012

ANNEXURE R12/6

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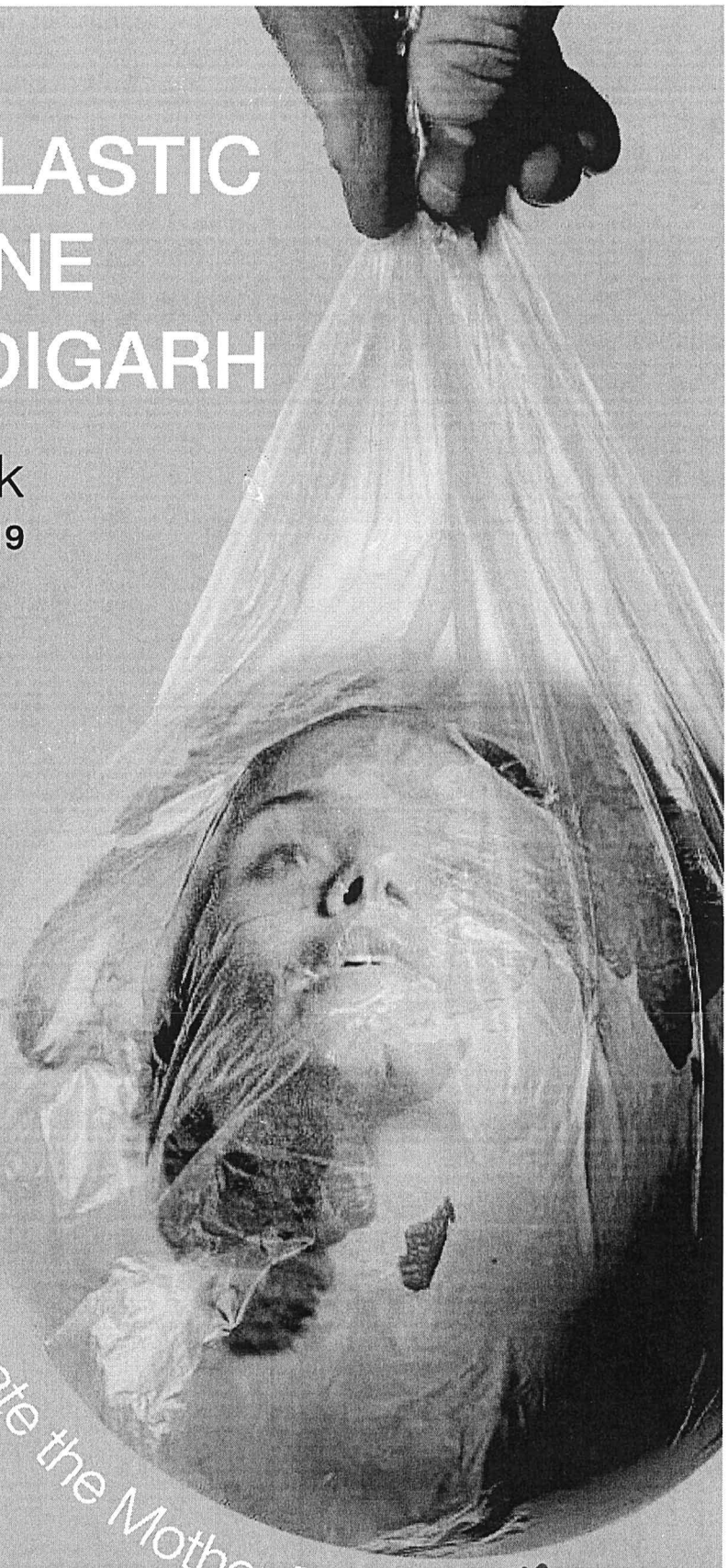
SINGLE-USE PLASTIC AND POLYTHENE **BAN** IN CHANDIGARH

– A Pictorial Guidebook

June, 2019



DEPARTMENT OF ENVIRONMENT
CHANDIGARH ADMINISTRATION

APPEAL

Shri. V.P. Singh Badnore
Administrator of U.T. Chandigarh

"City Beautiful should say 'NO' to Plastic."

Shri. Manoj Kumar Parida, IAS
Adviser to the Administrator, UT, Chandigarh

"Plastic is Enemy of Environment, We Must Minimise its Use."

Shri. Arun Kumar Gupta, IAS
Principal Secretary Environment, UT, Chandigarh

"**We are addicted to convenience of single use plastic. Thus, individual has to come forward to avoid such practices.**"

Shri. Debendra Dalai, IFS
Director Environment, UT, Chandigarh

"Refuse single-use plastic right from the birth, to save ourselves and the Mother Earth."

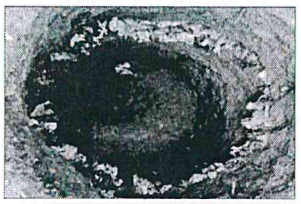
Shri. T.C. Nautiyal, IFS
Member Secretary, CPCC

"**Cloth bags are beautiful. Let us use cloth bags instead of plastic bags.**"

Why say NO to PLASTIC ?

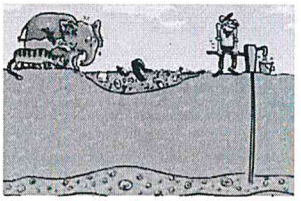
Animals eat food waste thrown in plastic materials. This affects them and their digestive system leading to death.

Plastic forms a layer within the soil which prevents rain water from seeping into the ground.

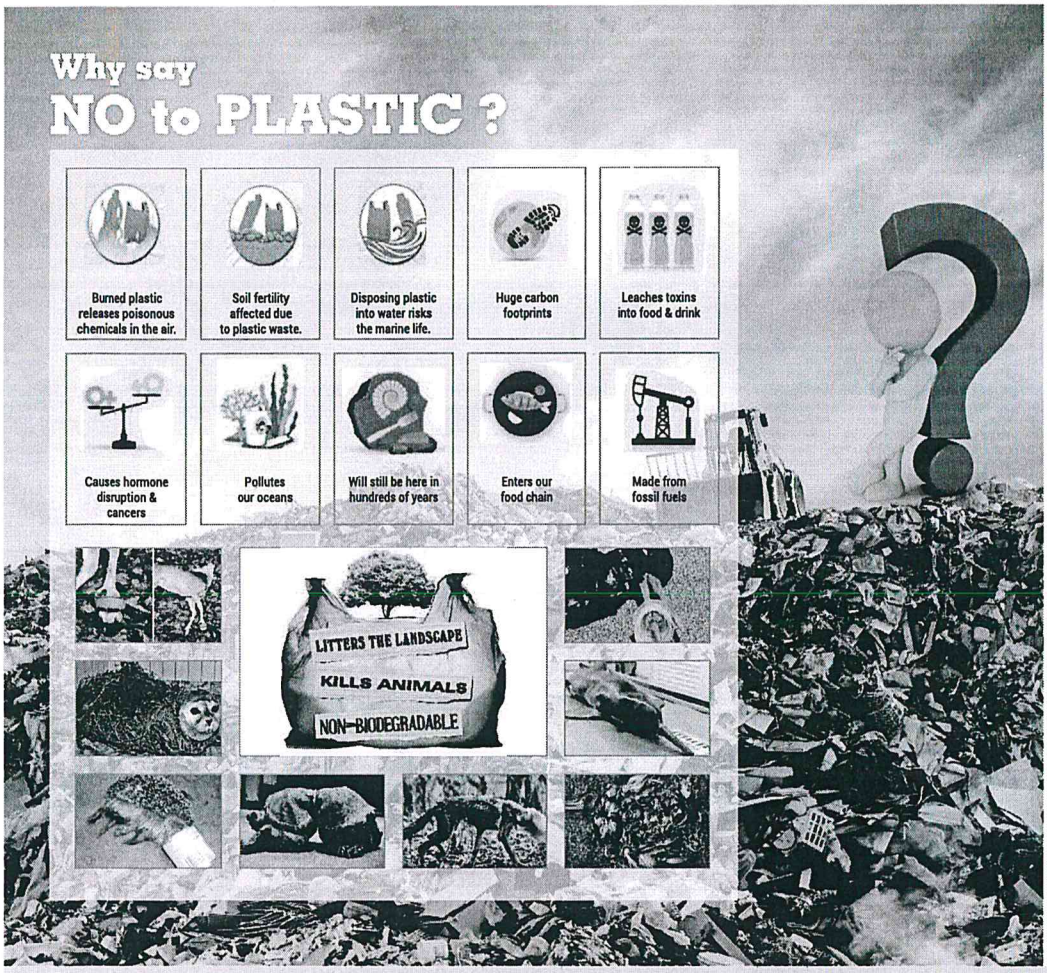


Improper disposal of plastic material can block the drainage system and further act as a breeding place for mosquitoes which will ultimately affects human health.

Open disposal of plastic waste also pollutes the surface water bodies making it unfit for use. Man has alternate source of water but animals do not.



116



PLASTIC BAN IN CHANDIGARH & PENALTIES

Notification no. ED/2008/684 dated 30.07.2008; issued by Department of Environment, Chandigarh Administration under Section 5 of the Environment (Protection) Act, 1986, prohibits any person to manufacture, store, import, sell, transport or use polythene/plastic carry bags in the U.T. Chandigarh.

Further, under Section 15 of the Environment (Protection) Act, 1986, whoever fails to comply with the orders issued under Section 5 of the Environment (Protection) Act, 1986, shall be punishable with imprisonment for a term which may extend to five years with fine which may extend to one lakh rupees, or with both.

DIRECTIONS OF HON'BLE NGT

Hon'ble National Green Tribunal (NGT) in it's order dated 04.12.2015 in O.A. No. 442 titled as R.D. Anand Vs. Chandigarh Union Territory Administration & Anr., directed that any person who is found to be using, storing, purchasing, dealing with or distributing plastic bags, plastic plates or plastic glasses and such allied items shall be liable to pay environmental compensation at the rate of Rs. 5000/- per event."

Further, Hon'ble National Green Tribunal (NGT) in it's order dated 20.01.2016 in O.A. No. 442 titled as R.D. Anand Vs. Chandigarh Union Territory Administration & Anr., completely prohibit use of plastic, manufacturing, storing and/or any kind of plastic carry bag(s) including Non-woven material of Poly propylene 100% & Non-Biodegradable plastic bag(s) in the Union Territory of Chandigarh.

T. C.

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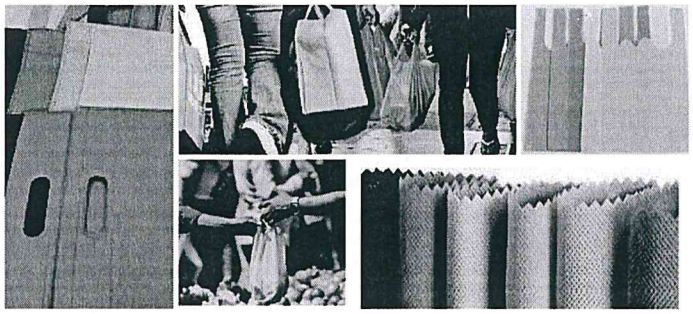
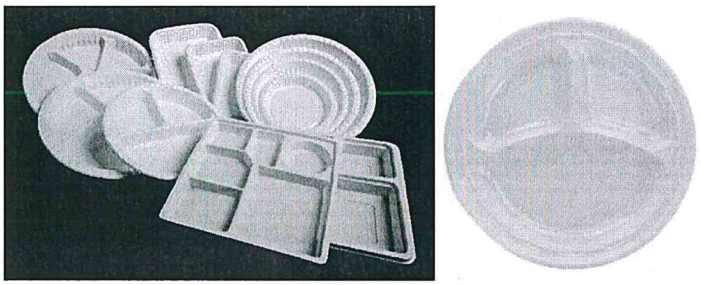
BANNED

Plastic/ Polythene carry bags (Directions of Chandigarh Administration)

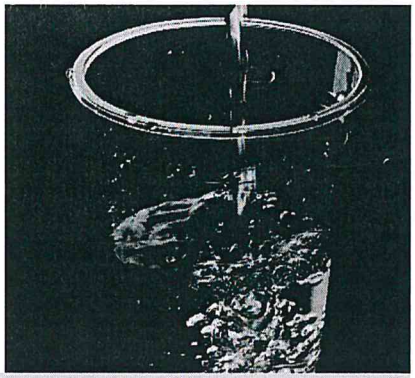
Non- woven plastic carry bags (Directions of Hon'ble NGT)



Single use Plastic plates (Directions of Hon'ble NGT)



Single use Plastic glasses (Directions of Hon'ble NGT)



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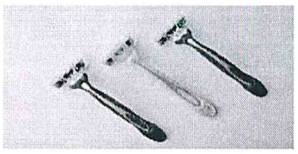
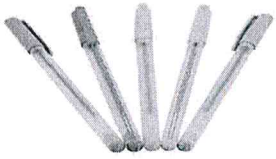
AVOID

One time use/single use disposable items made of Thermocol (Polystyrene)/Plastic. e.g. dish, spoon, cups, plates, glasses, fork, bowl, container.

Less than 200 ml Drinking water PET/PETE bottles, having liquid holding capacity.

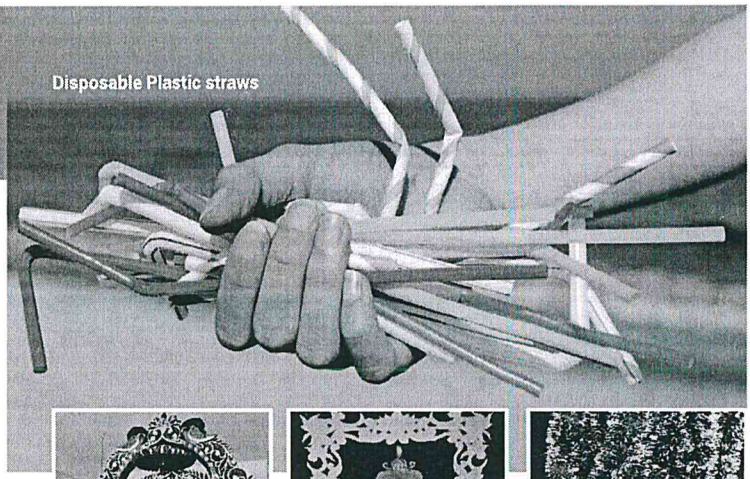


Single-time use (Use & throw) razors.

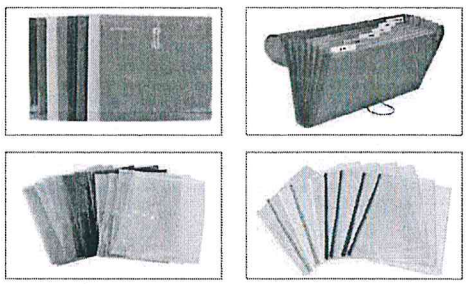


Single-time use (Use & throw) pens.

Disposable dish or bowl used for packaging of food in hotels.



Use of Plastic & Thermocol for decoration purpose



Plastic stationery products used for office & education

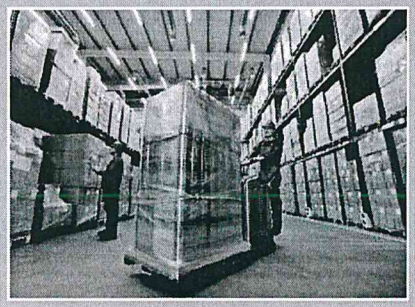
T-12

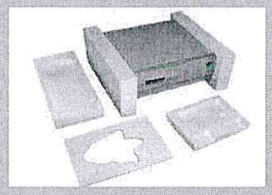
119

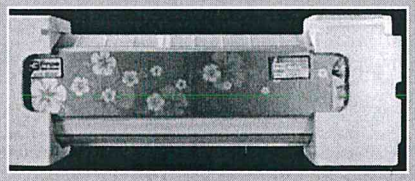
ALLOWED

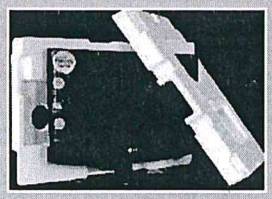
All other plastic items are allowed till the time any clarification is provided by NGT on "other allied items" and any notification is passed by Chandigarh Administration. Compostable carry bags/ products are allowed.

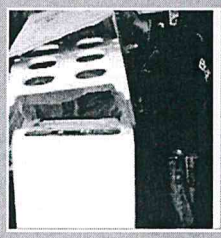
Plastic material made up of minimum 20% recyclable plastic material & having a thickness more than 50 micron, used for wrapping the material at the manufacturing stage or integral part of manufacturing.









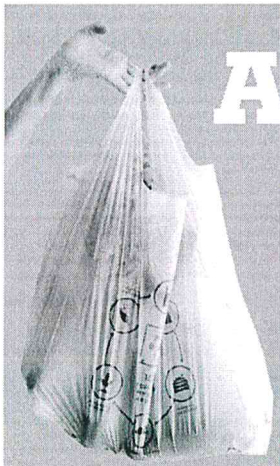


Plastic packaging material more than 50 micron thickness (Industrial packaging)

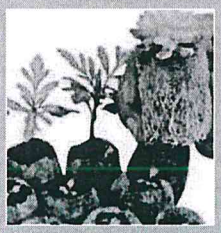
T-2

120

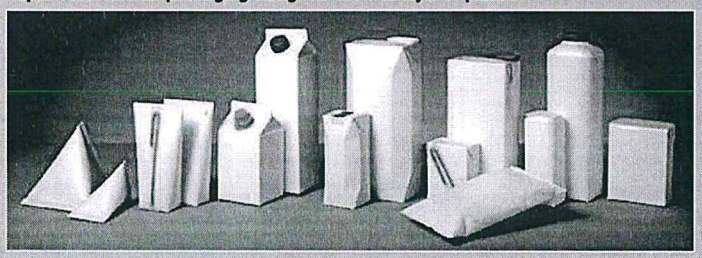
ALLOWED



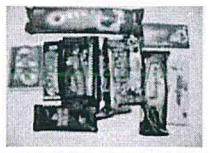
Compostable Plastic Bags used for plant nurseries, horticulture, agriculture & handling of solid waste



Paper based carton packaging using one or more layer of plastic

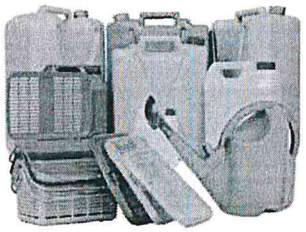


Virgin Plastic bags used for milk having thickness not less than 50 micron



Multilayered Plastic

Plastic Items Used For Domestic Purpose



T-81

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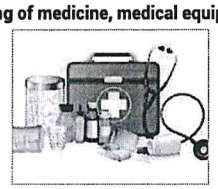
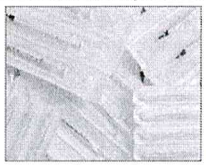
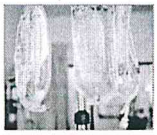
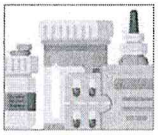
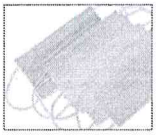
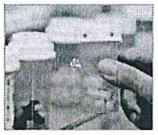
ALLOWED

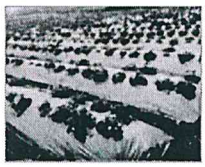
Use of Plastic for packaging of medicine, medical equipments & medical products

Other Plastic Products







ACKNOWLEDGEMENT

Ministry of Environment, Forest & Climate Change, Government of India is continuously taking initiative by publishing guidelines to minimize production and use of single use plastic.

In continuation, Department of Environment, Chandigarh (U.T.) has taken up the task of bringing out a booklet on Single-use Plastic and Polythene Ban in Chandigarh. The booklet has all the information about items banned and allowed in Chandigarh. Also, it has information about the items that one can avoid using and help in making the environment free from the burden of plastic material.

I owe my deep gratitude to Honourable, Shri V.P. Singh Badnore, the Administrator, U.T. Chandigarh for actively supporting the initiative of publishing the pictorial guidebook on Plastic use.

I am extremely indebted to Shri Manoj Kumar Parida (IAS), Advisor to the Administration, Chandigarh for providing constant guidance in giving final shape to the booklet.

I express my sincere thanks to Shri Arun Kumar Gupta (IAS), Principal Secretary Environment, Chandigarh Administration for the valuable suggestions and inputs during the preparation of booklet on Plastic.

The co-operation of Shri T.C. Nautiyal, Member Secretary, Chandigarh Pollution Control Committee (CPCC) and his team in providing useful inputs is highly appreciated.

Constant and continuous technical support provided by Shri Vivek Pandey, Scientist SD, Department of Environment, Chandigarh Administration in the formulation of this booklet is highly commendable.

I am also thankful to Mr. Mohit Badhwar, Programme Officer, ENVIS Hub, Department of Environment, Chd Admn. for his support in preparation of this booklet.

I heartily thank Dr. Deepika Thakur, Scientific Officer, Capacity Building Division, Department of Environment, Chandigarh Administration who has made very significant and valuable contribution in compilation, designing and preparation of this pictorial guidebook on Single-use plastic and polythene ban in Chandigarh.

I finally thank one and all for making a sincere effort in the campaign to say "NO" to single-use plastic in Chandigarh.

(Debendra Dalai)
Director, Environment
UT, Chandigarh

T.C.

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NOTE

This pictorial guidebook is for the ready reference for the responsible citizens of Chandigarh.

The detail information of the ban on the polythene /plastic carry bags (Notification No. ED/2008/684) and direction of Hon'ble NGT is available on the website:
www.chandigarhenvis.gov.in / www.chenvis.nic.in

"It's in our hands to make this Earth Green & Alive, so use Less Plastic for More Life"

DEPARTMENT OF ENVIRONMENT
CHANDIGARH ADMINISTRATION
Paryavaran Bhawan (3rd Floor), Sector 19-B, Madhya Marg, Chandigarh -160019
E-mail: direnvchandigarh@gmail.com; Tel.: 0172-2700065

500 Copies; June 2019

ANNEXURE R12/7

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Government of Maharashtra
Environment Department, Mantralaya, Mumbai

No. [illegible] Date: 10.07.2018

CIRCULAR

In exercise of the powers conferred by Clause (1) and (2) of Section 4 of the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006 the Government of Maharashtra has notified the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, Transport, Handling and Storage) Notification 2018 dated 23rd March 2018 and amended on 11th April 2018, 30th June 2018. In order to guide the public at large about the banned and unbanned plastic and thermocol items, a booklet showing an illustrative pictorial information is published herewith.

The copy of Notification and booklet are available on the website of Environment Department, Government of Maharashtra and Maharashtra Pollution Control Board.

(Anil Diggikar)
Principal Secretary (Environment)

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DEPARTMENT OF ENVIRONMENT, GOVT. OF MAHARASHTRA
http://mahenvis.nic.in

MAHARASHTRA POLLUTION CONTROL BOARD
http://mpcb.gov.in

Shri Devendra Fadnavis
Hon'ble Chief Minister,
Maharashtra State

Shri Ramdas Kadam
Minister for Environment,
Maharashtra State

Shri Pravin Pote-Patil
Minister of State for Environment,
Maharashtra State

AN ILLUSTRATED GUIDE BOOK FOR PLASTIC AND THERMOCOL BAN NOTIFICATION

एकच ध्यास ठेवूया, प्लास्टीक पिशवी हटवूया,
समृद्ध पर्यावरणाचे रक्षण करुया!

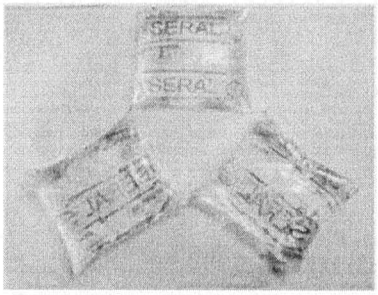
125

Banned

less than 200 ml. Drinking water PET / PETE bottles, having liquid holding capacity

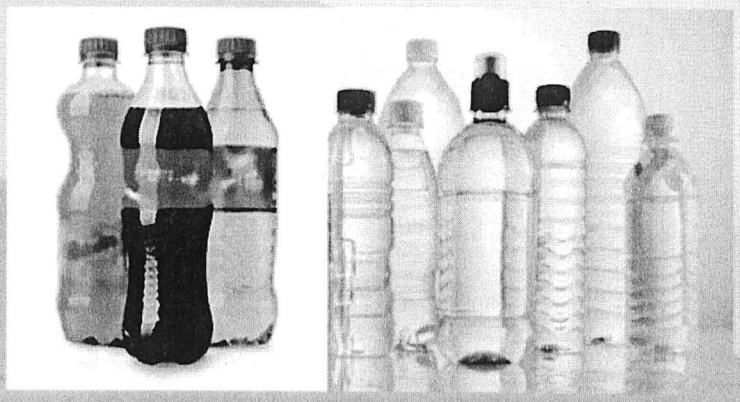
Banned

Plastic Mineral Water Pouch



Allowed

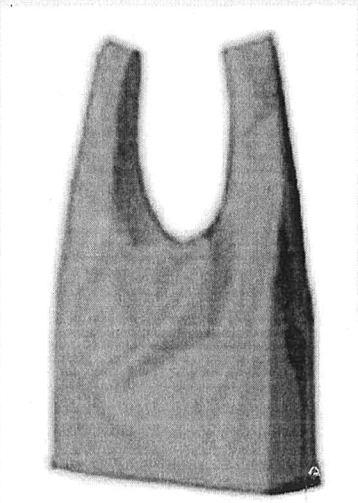
PET / PETE Bottles having a liquid holding capacity 200 ml. and more than 200 ml. (printed with deposit and refund price or buy-back price under EPR)



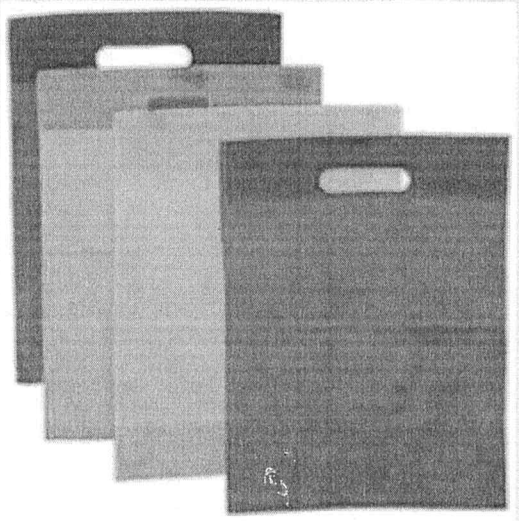
DEPARTMENT OF ENVIRONMENT, GOVT. OF MAHARASHTRA | MAHARASHTRA POLLUTION CONTROL BOARD

Banned

Plastic Bags
(With Handle / Without Handle).



Plastic Bag

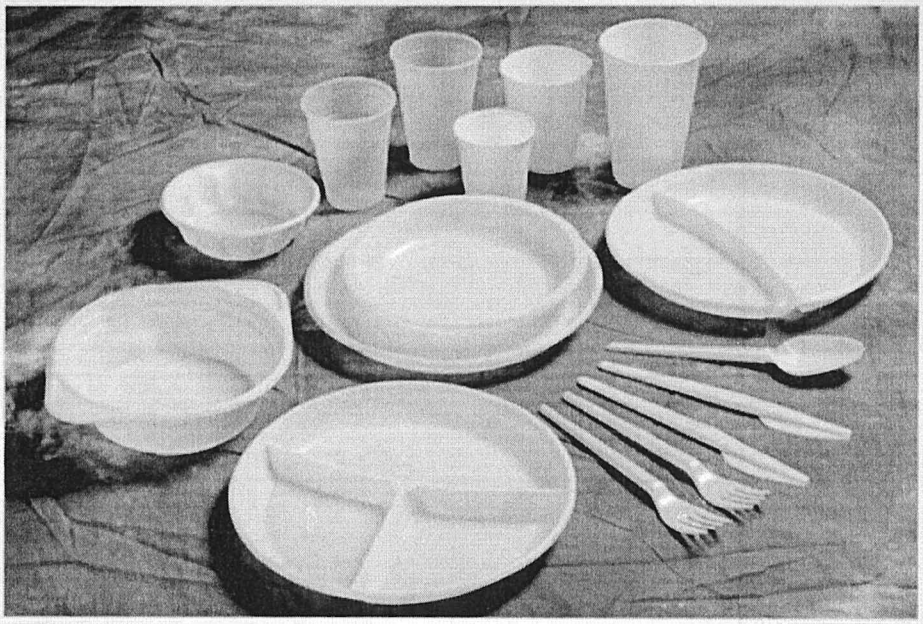


Non- woven Bags.

Plastic Bag or Non- woven Shopping Bags

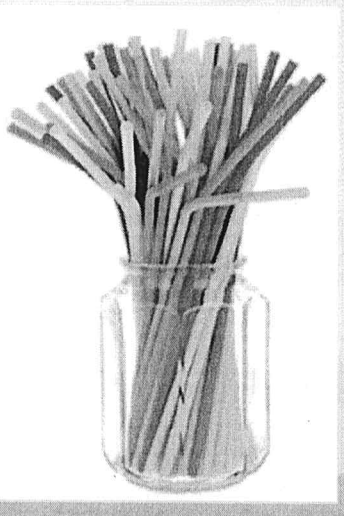
Banned

One time use / Single use disposable items madeup of Thermocol (Polystyrene) or Plastic. e.g. dish, spoon, cups, plates, glasses, fork, bowl, container.



Banned

Disposable dish / bowl used for packaging foods in hotels and Straw

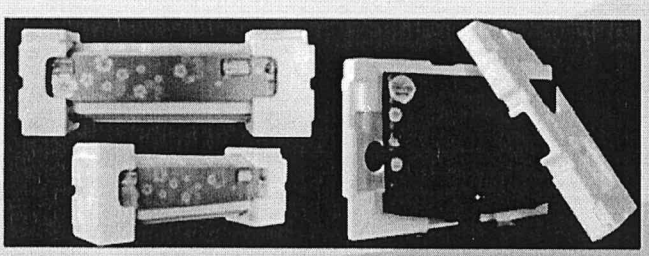


Allowed

Manufacture of plastic and plastic bags for export purpose in special economic zone & export oriented units.

Allowed

Plastic material madeup of minimum 20 % recyclable plastic material & having a thickness more than 50 micron, used for wrapping the material at the manufacturing stage or integral part of manufacturing. Thermocol used for wrapping the material at manufacturing stage. (printed with manufacturer's details, type of plastic with code number and buy-back price under EPR)



DEPARTMENT OF ENVIRONMENT, GOVT. OF MAHARASHTRA | MAHARASHTRA POLLUTION CONTROL BOARD

Allowed

Plastic packaging material more than 50 micron thickness with minimum two grams weight used toseal groceries & grain products for wholesale& retail. (printed with manufacturer's details, type of plastic with code number and buy-back price under EPR)

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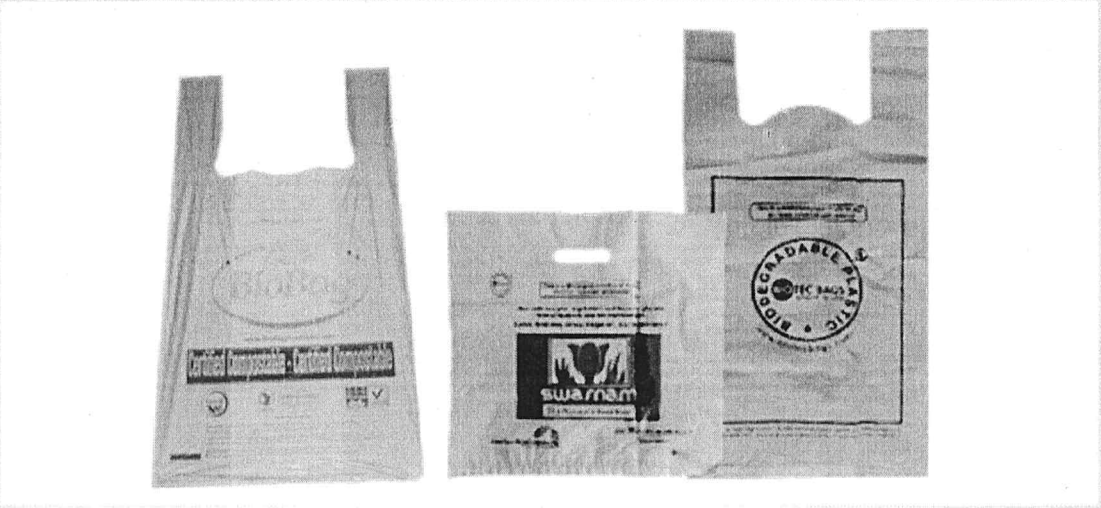
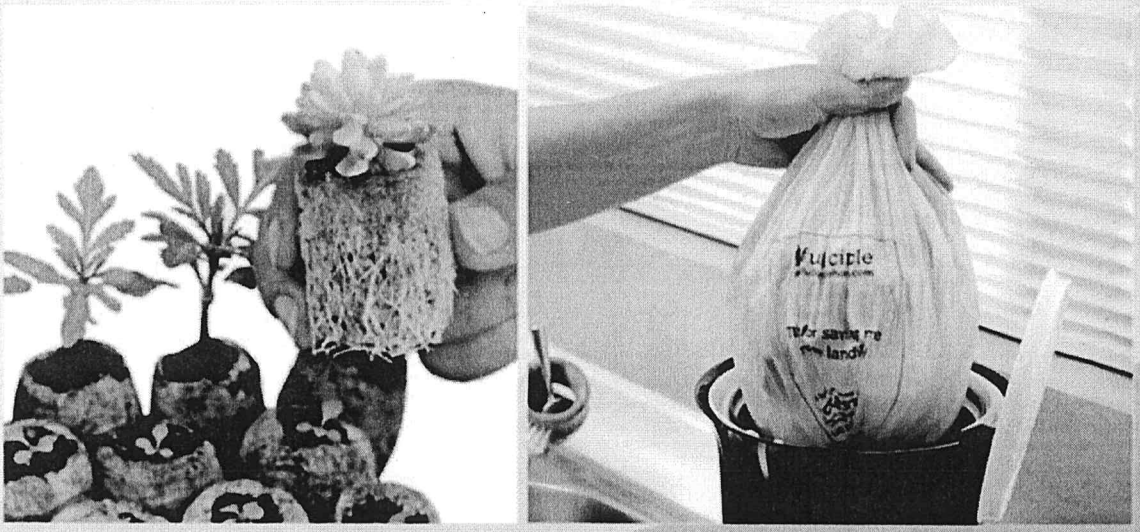
Banned

Any Compostable Plastic Bags except for Plant nurseries, horticulture , agriculture & handling of solid waste.



Allowed

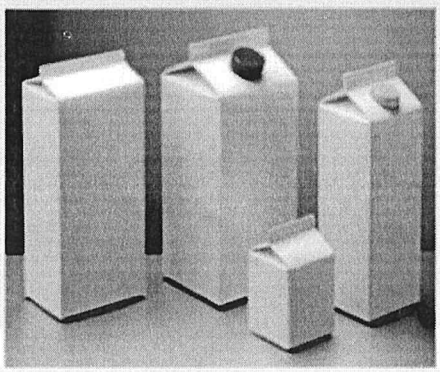
Compostable Plastic Bags used for Plant nurseries, horticulture, agriculture & handling of solid waste.

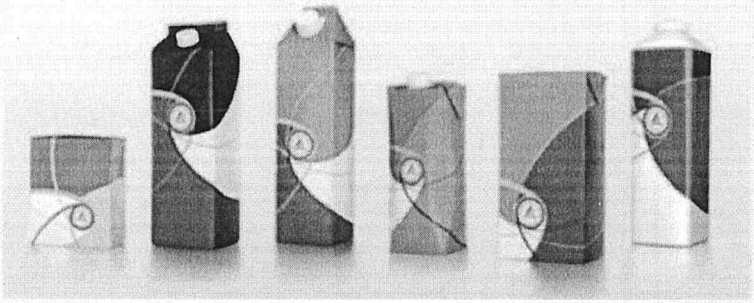


DEPARTMENT OF ENVIRONMENT, GOVT. OF MAHARASHTRA | MAHARASHTRA POLLUTION CONTROL BOARD

Allowed

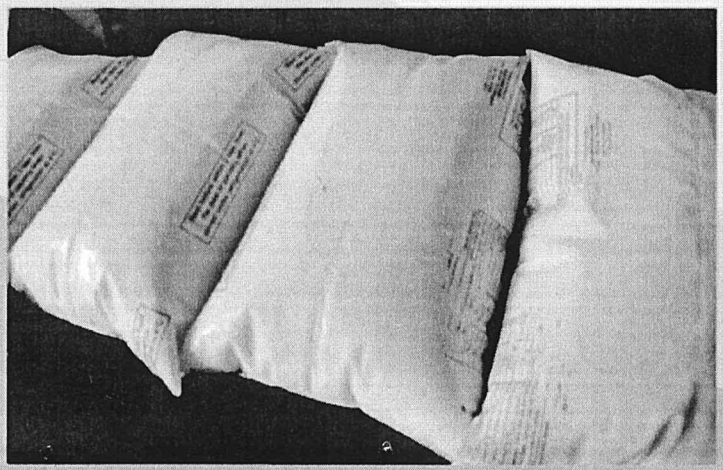
Paper based carton packaging using
one or more layer of plastic





Allowed

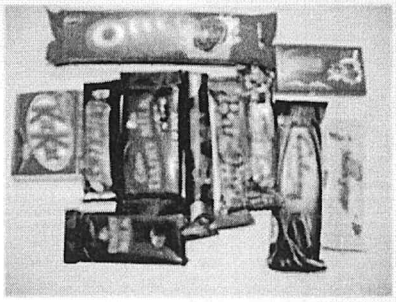
Virgin Plastic bagsused for milkhaving
thickness not less than 50 Micron
& printed with a buy back price.



DEPARTMENT OF ENVIRONMENT, GOVT. OF MAHARASHTRA | MAHARASHTRA POLLUTION CONTROL BOARD

Allowed

Recyclable multilayered plastic



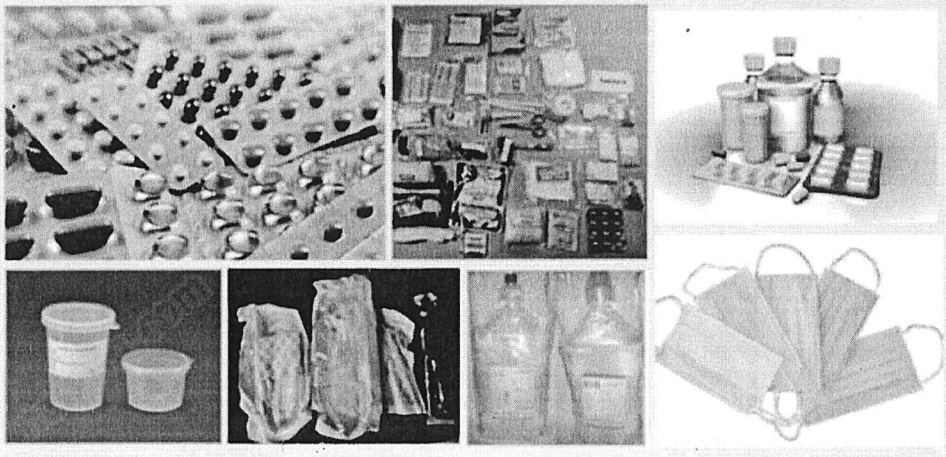
Chips packet, Shampoo sachet, Oil packet, Chocolate packet etc.

Allowed

Plastic items used for domestic purpose.

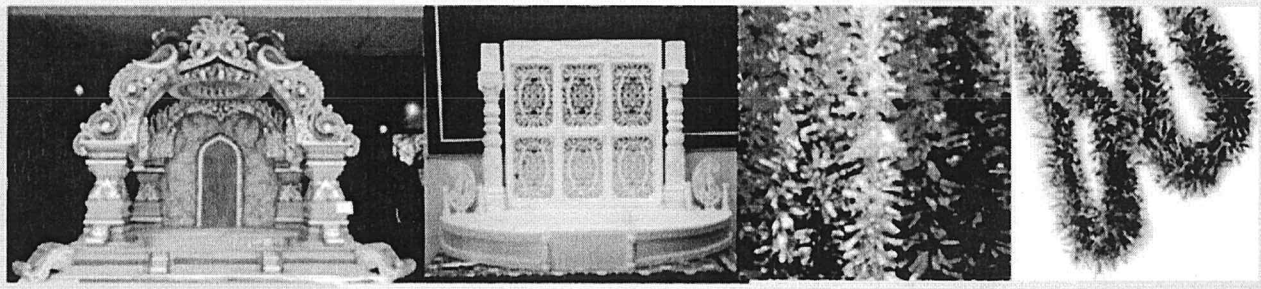
Allowed

Use of Plastic for packaging of medicine, medical equipments & medical products.



Banned

Use of Plastic & Thermocol for decoration purpose.



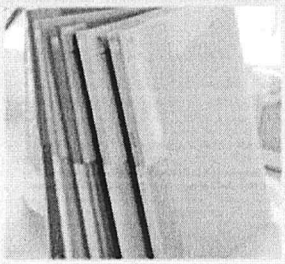
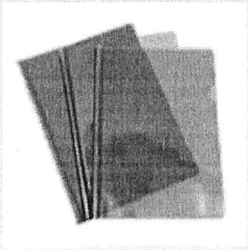
Allowed

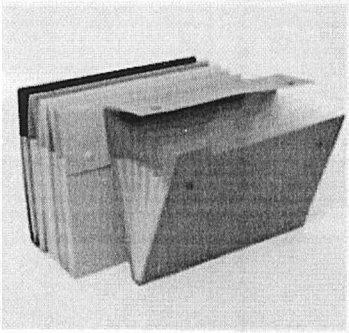
Use of Thermocol Boxes to preserve fish in fishery business

DEPARTMENT OF ENVIRONMENT, GOVT. OF MAHARASHTRA | MAHARASHTRA POLLUTION CONTROL BOARD

Allowed

Recyclable plastic stationery products
used for office & educations.

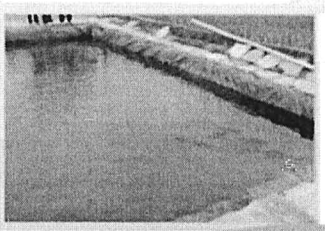



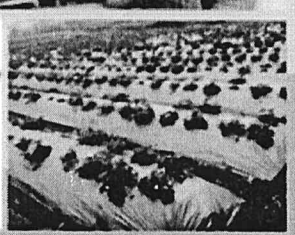



Allowed

Other plastic products







DEPARTMENT OF ENVIRONMENT, GOVT. OF MAHARASHTRA | MAHARASHTRA POLLUTION CONTROL BOARD

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Penalties under plastic & Thermocol Notification

First offence Rs. 5000/- Fine

Second Offence Rs.10,000/- Fine.

Third Offence Rs. 25,000/- Fine + 3 months imprisonment

Note :

Above pictorial information is an illustrative.

The detail information of the Maharashtra plastic & thermocol products (Manufacture, usages, sale, transport, handling & storage)

notification 2018, is available on the website

http://mahenvis.nic.in,

http://mpcb.gov.in & https://dgps.maharashtra.gov.in

ANNEXURE R12/8

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Report of Expert Committee

To examine *"whether any further regulatory provisions are required on the subject of restrictions on the packaging by use of plastic material, after the steps already taken and if so to what extent"*

(constituted as per NGT Order passed in O.A. No. 15/2014 dated 31/5/19)

Submitted to

Hon'ble National Green Tribunal

Date: 30th August, 2019

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REPORT OF THE EXPERT COMMITTEE ON NGT ORDER IN HIMJAGRITI CASE

Background

1. Vide order number O.A. No. 15/2014 dated 31.05.20190 in the "*Himjagriti Uttaranchal Welfare Society*" case, Hon'ble National Green Tribunal (NGT) constituted an Expert Committee (hereafter called EC) to examine ***"whether any further regulatory provisions are required on the subject of restrictions on the packaging by use of plastic material, after the steps already taken and if so to what extent".*** As per the order, the EC would comprise of the representatives of Bureau of Indian Standards (BIS), Central Pollution Control Board (CPCB) and Directorate General of Health Services (DGHS) with Food Safety & Standards Authority of India (FSSAI) as the nodal agency for coordination.

Meeting and consultations

2. Taking the lead, FSSAI organized a series of meetings, inviting other stakeholders technical institutes, prominent NGOs working in the field of environment and plastics, other government bodies, businesses and companies involved in manufacturing and use of plastics in packaging of foods, beverages and other items. Meetings and discussions were held as under -

1) Expert committee meeting on 28th June, 2019.
2) Expert committee meeting with industry associations on 28th June, 2019.
3) Consultation with NGOs and other Social Groups on 12th July, 2019.
4) Consultation with Indian Beverage Association on 8th August, 2019.
5) Expert committee meeting with technical institutes and experts on 20th August, 2019.
6) Expert committee meeting with co-opted members on 21st August, 2019.

List of participants in each meeting is at Annex-1.

3. During its deliberation, the EC noted that food and beverages, drugs and cosmetics and textiles are major items of mass consumption that use plastic packaging. The EC considered the following laws, rules and regulations currently in force on the issue of use of plastics, in addition to scientific literatures available on the subject:

1) Food Safety and Standards (Packaging) Regulations, 2018

2) Plastic Waste Management Rules, 2016.
3) BIS Standard; IS: 14534 Guidelines for Recycling of Plastics and IS: 12252 Polyalkylene Terephthalates (PET and PBT), Their Copolymers and List of Constituents in Raw Materials and End Products for their Safe Use in Contact with Foodstuffs and Pharmaceuticals (First Revision)
4) Legal Metrology (Packaged Commodities) Rules 2011.

Key Areas of Concern

4. The EC in its deliberation was of the firm opinion that excessive use of plastics, especially in the packaging of non-essential products is a matter of concern. The main focus of EC was to identify areas where the use of plastics may be reduced or other environment friendly packaging could be used. In order to make its recommendations on regulatory provisions, the EC decided to look at the entire gamut of issues and concerns related to plastic use in packaging and possible actions that various stakeholders could take. Seven major areas of concern as under were identified:

1) Continued use of multi polymer plastic (MPP) or multi layered plastic (MLP) with associated difficulties in its recycling.
2) Increasing use of small packages such as bottles used for beverages, sachets, pouches which are not viable to collect and recycle.
3) High capital cost involved in the presently available techniques in recycling plastics.
4) Inadequate reach of Extended Producer Responsibility (EPR).
5) Non availability of economically viable substitutes to the plastics.
6) Lack of consumer awareness for proper disposal of plastics and litter management.
7) Absence of joint regulatory mechanism with respect to plastic waste management.

Systematic Plan of Action

5. In order to address the above concerns, the EC proposes the following systematic plan of action with 12 specific points by different stakeholders.

(A) Manufacturer / User Industries of Plastic Packaging Materials

(1) *Institute concept of 'plastic footprint':* What gets measured is managed. Therefore, in order to encourage businesses to reduce use of plastics through innovation and redesigning of their packaging, a system of quantifying the use of plastics per unit of final product (say kg of plastic used in 1000 kg/kiloliter of final product) may be put in place. A deflator or inflator may be used for use of recyclable plastics, biodegradable/compostable plastics or multilayered plastic as the case may be. A system of periodic assessments of plastic footprint for each product category may be done. In food and beverages, these categories could include confectionery and bakery products (biscuits, ice-creams, bakery products and chewing gum), namkeens (chips, namkeen, nuts/peanuts), instant noodles and cereals, beverages (cold drinks, juices, energy drinks and hot drinks) and dairy products (milk, paneer, yoghurt and flavoured milk). Plastic footprint for each category may be benchmarked with the market average of use of plastic. This would encourage companies to adopt packaging reduction strategies that may include reducing weight of packaging, eliminating unnecessary packaging, using lightweight packaging materials, optimizing packaging size and use of recyclable (compostable) and reusable packaging material. Through a system of recognition, rewards and perhaps eventually penalties, it is hoped that the companies would work towards continuous reduction of plastics, product by product and enable businesses to demonstrate their commitment to safer environment.

(2) *Discourage small pack sizes*: Lighter, portable, and cost-effective nature of single serve sachets/pouches/bottles continues to make them an attractive proposition for the low-income consumers as well as young and active millennials. Smaller pack sizes/single serve packaging also have brought better quality and premium products affordable to all the sections of the society. But on the other hand it constitutes to the major plastic waste and litter, as their collection is economically non-viable. Hence, in consultation with Legal Metrology Dept. the small pack sizes such as small water bottles, pouches, cups which constitute a considerable amount of plastic waste may not be allowed.

(3) *Reducing plastic content in multi-layered plastic (MLP):* Ideal packaging materials had been tailored by combining different material with customized functionality

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to sufficiently protect sensitive food products and thus obtain extended shelf life. Latest feasible techniques and technologies may be employed to cut down the use of multiple polymers/plastics. More research in this area is required to be done by scientific institutions. Use of Single polymer/layer recyclable packaging materials shall be encouraged in this case.

(4) *Encourage alternatives to plastics:* Bio-plastics and biodegradable plastics like Poly Lactic Acid (PLA) made from fermented plant starch etc. can be a sustainable alternative to conventional plastics. However there are limitations with the availability of resources for such material. More research in the area to reduce the cost of PLA is required to be done. There is also need to create awareness on biodegradable, compostable or bio-based plastics since their degradation requires conditions like appropriate temperature, light, hydration and/or microbial presence. Hence these have to be separately marked and disaggregated. In case, the biodegradable &compostable or bio-based plastics remain unsegregated and go in landfills just like that, it is unlikely to meet these conditions and serves no purpose. Existing packaging systems of paper based cartons with minimal plastics as coatings, composite and reusable containers made up of glass, tin, metal and paper maybe promoted as replacements. A list of alternatives to plastic packaging materials as suggested by Centre for Science and Environment (CSE) is at Annexure-2.

(5) *Effective Extended Producer's Responsibility (EPR) framework:* The current Plastic Waste Management Rules mandate the "producer of packaging products and branded consumer goods to dispose plastic packaging waste generated due to their business activities". Even though the policy framed under these rules is fairly good but it has been confined to selected few big businesses. It is understood that National Framework on EPR for plastic waste management is being finalized. The framework may consider a system of monitoring as well as penalty provision for its non-compliance may be explored. The companies may be encouraged to use their downstream supply chain of distribution and retail for collection and aggregation of plastics for recycling. This may be quite easy in direct selling entities that use multi-layered marketing, distribution networks.

(B) Final consumers/Users of plastic packaged articles and food stuff

Establishments, agencies, institutions, organizations including government/non-government, food/non-food operators such as roadways, railways, airlines, schools, colleges and university campuses, E-commerce groups, corporate campuses, hotels, marriage, banquet and community halls under this head shall take-up responsibilities on the following;

(6) *Eliminate/Ban single use plastics:* should eliminate and prohibit the usage of single serve/use plastics within their ecosystems. Recent ban by the Parliament and Indian railways are worth emulating.

(7) *Alternatives to plastics:* They shall encourage the use of reusable and recyclable environment friendly alternatives such as jute and cloth bags, bamboo and wooden cutlery, leaf based plates, glass and metal containers etc.

(8) *Improved Litter Management:* They should take up the responsibility of collecting all the waste in their campuses, sorting out dry and wet waste. They could also encourage their staff, teachers and students to bring such plastic waste from homes and help in collection and aggregation of such waste by tying up with businesses in plastic recycling. Dry waste can be segregated into recyclable and non-recyclable and accordingly processed. Wet waste may be sent to composting, which can be done in-house. This activity could be made a part of the social responsibility system.

(9) *Better Plastic Disposal:* Initiatives are to be taken up, to dispose plastic waste by forming groups/clusters to set up/identify energy recovering systems such as incineration and pyrolysis. Getting adequate quantities of suitable plastics waste is seen as most important factor in success of such units. More organized efforts and encouragement is required for this proper disposal.

(C) Municipal bodies/other organizations promoting circular economy

(10) All municipal bodies must be made responsible for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste either on its own or by engaging agencies or producers as mentioned in the Plastic Waste Management Rules.

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(D) Citizens and consumers

(11) Citizens, especially the socially engaged ones living in urban areas with wide access to information, have adopted more environmentally conscious consumption habits oriented toward recycling, reusing and composting the waste that derives from their domestic consumption. This segment of socially discerned consumers, appreciate brands that demonstrate a commitment to environmental sustainability. A more intensive public campaign, however, is needed to mainstream this kind of behavioral change to a wider public segment.Further approach of incentivising the customers can also be explored to encourage them for plastic waste management.

(E) Science and Research Institution

(12) Science and research institutions must be encouraged for working in the direction of developing environmental friendly packaging materials and plastic waste management systems which can be used on commercial basis. Start-ups may also be encouraged to work in this area. For the food and beverages sector, FSSAI may create a group of institutions and experts to coordinate new work in this area with leading institutions like the Indian Institute of Packaging, CIPET, IIT Delhi, IIT Guwahati, Indian Institute of Toxicological Research (IITR), National Chemical Laboratory, Pune and others.

Regulatory Action

6. In the backdrop of the action points for different stakeholders listed above, the EC noted that issues of packaging are more critical in food, beverages and medicines. There are not only environmental issues but also public health issues. There are concerns about increasing shelf-life and reducing food waste by providing more effective packaging solutions for food and beverages. In this regard, FSSAI has recently initiated several steps to reduce the use of plastics in packaging of food and beverages and make it safer. These are as under:

(1) FSSAI has decided to permit use of liquid nitrogen dosing in PET bottles during the packaging of drinking water. This would help in strengthening the bottle thereby facilitating the manufacture with the use of bottles with lower wall thickness.

(2) FSSAI has initiated the process of removing the restriction on the use of returnable bottles for packaging of artificially sweetened beverages.

(3) FSSAI is promoting the use of bamboo as an alternative to plastics such as straws, plates, bowls, cutlery etc.

(4) Allow and enable hotels to keep in-house packed glass bottles in place of plastic bottles in hotel rooms.

7. As its commitment towards food safety and better environment, the FSSAI is establishing a separate '*Scientific Panel on Packaging and Food Contact Materials'*. In the context of ban on single use plastics, the Expert committee noted that many state governments have imposed a ban on single use plastic. There are however differences in approach and definition. It is understood that the Department of Chemicals and Petrochemicals has formed a Committee to define single use plastic. This committee is expected to submit its report soon and same could be implemented nation-wide. Finally, the Experts Committee made the following four specific recommendations on regulatory aspects on use of plastics.

(1) Food Safety and Standards (Packaging) Regulations, 2018: To review the limits of heavy metals in PET and fix the limits of specific migration limits of Antimony and DEHP (Diethylhexyl-phthalate). In addition to this also explore the possibility of setting limits for Cadmium and chromium.

(2) Food Safety and Standards (Packaging) Regulations, 2018 and IS 14543 (Packaged Drinking water): To remove the restriction on the use non-transparent bottle for drinking water to enable businesses to explore the possibilities of use of alternatives other than the PET currently in use.

(3) Food Safety and Standards (Packaging) Regulations, 2018; IS 14534 (Guidelines for Recycling of Plastics); and Plastic Waste Management Rules, 2016:The European Food Safety Authority (EFSA) permits the use of recycled PET in food packaging under certain set protocols. EC recommends to explore the possibilities for removal of ban on use of recycled plastic in food packaging after a scientifically validated method of pre-cleaning of plastic waste is developed to ensure that the final product using recycled material does not pose any health risk.

(4) Legal Metrology (Packaged Commodities) Rules 2011: To explore the possibilities of restricting small packs of commodities such as water, shampoo, sauce, pickle etc.

Review and Monitoring

8. The Expert Committee noted that while regulatory provisions for restrictions on the packaging by use of plastic material are mostly in place, there is lack of coordinated approach and implementation of these provisions is poor. It suggested putting in place sector-specific mechanisms to review and monitor the use of plastics in packaging and commitment of businesses under '*Extended Producer Responsibility (EPR)*' framework, managing plastic footprints, and related issues. In this, sector-specific regulators such as FSSAI (for food and beverage packaging), CDSCO (for drugs and cosmetics packaging), Ministry of Textile (for textile packaging) etc. and the Central Pollution Control Board (CPCB) could work together to ensure better coordination. Related ministries and the Ministry of Housing and Urban Affairs and Department of Drinking Water and Sanitation could also be associated for better coordination with Swachh Bharat Mission.

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Annexure 1: List of Participants

I. Expert Committee meeting on 28.06.2019

1. Sh. Pawan Agarwal, CEO, FSSAI
2. Sh. V K Diundi, Scientist-F & Head(PCD), Bureau of Indian Standards (BIS)
3. Sh. Vijay Kumar Gupta, Scientist-C(PCD), Bureau of Indian Standards (BIS)
4. Dr. Pradeep Saxena, Addl DDG (PS), Director General of Health Services (DGHS)
5. Sh. Pankaj Agarwal, Scientist-E, Central Pollution Control Board (CPCB)
6. Professor Alok Dhawan, Director, CSIR-IITR
7. Dr. N. Bhaskar, Advisor(QA),FSSAI
8. Dr. A. C. Mishra, Joint Director(Standards), FSSAI
9. Ms. Manpreet Kour, Technical Officer(Standards), FSSAI

II. Expert Committee meeting with Industry stakeholders held on 28.06.2019

Expert Committee Members:

1. Sh. Pawan Agarwal, CEO, FSSAI- Chair
2. Sh. Shri V K Diundi, Scientist-F & Head(PCD), Bureau of Indian Standards (BIS)
3. Sh. Vijay Kumar Gupta, Scientist-C(PCD), Bureau of Indian Standards (BIS)
4. Dr. Pradeep Saxena, Addl DDG (PS), Director General of Health Services (DGHS)
5. Sh. Pankaj Agarwal, Scientist-E, Central Pollution Control Board (CPCB)
6. Professor Alok Dhawan, Director, CSIR-IITR

FSSAI Secretariat:

1. Dr. N. Bhaskar, Advisor(QA)
2. Dr. A. C. Mishra, Joint Director(Standards)
3. Ms. Manpreet Kour, Technical Officer(Standards)

Industry Representatives:

1. Ms. Parna Dasgupta- Kellogg's
2. Ms. Garima Singh- Mondelez
3. Ms. Monika Rawat, Zydus Wellness Products Limited
4. Ms. Tulika Shukla- Nestle India
5. Ms. Sangeeta Chadha- HUL
6. Ms. Priyanka Gupta- FICCI
7. Sh. D. V. Malhan, AIFPA
8. Sh. Satansh Kumar, AIFPA
9. Ms. Neha Agarwal,CII
10. Sh. Virender Landge, CII-FACE
11. Sh. Kalyan Vadlamani, CII
12. Ms. Priyanka Yadav, CII
13. Sh. Kumar Kalpam, Mother Dairy
14. Ms. Kajal Debnath, Mother Dairy
15. Dr. P. Jose David, Tata Global Beverages Ltd.
16. Sh. K. KalyanaRaman, Tata Global Beverages Ltd.

17. Dr. Aman Gupta, Yum Foods
18. Ms. Trapta Rastogi, Jubilant Food Works Ltd.
19. Sh. Sumit Chugh,Tata Starbucks Pvt. Ltd.
20. Sh. R. Boobalan, ITC Limited
21. Sh. R. Varadharajan, ITC Limited
22. Dr. M. Chakraborty, ITC Limited
23. Sh. Kalyan Chatterjee, ITC Limited
24. Sh. Adip Roy, Amway India Enterprises
25. Ms. Minakshi, Abbott
26. Ms. Manisha Singh, Abbott
27. Sh. Pratim Bralmelin, Flipkart
28. Sh. Kaushik Saha, Pepsico
29. Sh. Ramesh Ramachandran, Pepsico
30. Ms. Antara Kapoor, Pepsico
31. Sh. Himanshu Gupta, PCMA
32. Sh. R K Gera, PCMA
33. Dr. Vijay Habbu, PACE
34. Sh. Bharat B Mehta ,PACE
35. Sh. Prabhakar Mishra, Prefetti Van Melle India Pvt Ltd
36. Sh. Abhinav Srivastava, Amway India Enterprises

III. <u>Consultation with NGOs and other Social Groups on 12.07.2019</u>

Stakeholders:

1. Dr. Praveen Aggarwal, Action Alliance for Recycling Beverage Cartons
2. Sh. Maanik Bagai, Action Alliance for Recycling Beverage Cartons
3. Sh. Amit Khurana, Centre for Science & Environment
4. Ms. Swati Singh Sambyal , Centre for Science & Environment
5. Ms. Sharon Mathew ,Him Jagriti Uttaranchal Welfare Society
6. Dr. R.K. Singh, HimJagriti Uttaranchal Welfare Society
7. Mr. Akshaya Dhaundiyal , Him Jagriti Uttaranchal Welfare Society
8. Ms. Sonia Garga, Saahas
9. Ms. Nimisha Jha, Saahas

FSSAI Secretariat:

1. Sh. Pawan Agarwal, CEO
2. Sh. Kumar Anil, Advisor (Standards)
3. Dr. A. C. Mishra, Joint Director (Standards)
4. Ms. Manpreet Kour, Technical Officer (Standards)
5. Ms. Dilmeet Kaur, Intern
6. Ms. Akanksha Jain, Intern

IV. <u>Consultation with Indian Beverage Association on 08.08.2019</u>

IBA Representatives:

1. Sh. Arvind Verma
2. Sh. Chandramohan Gupta

3. Sh. Ish Kumar Bhatia
4. Sh. Jaideep Gokhale
5. Sh. Sharad Sharma
6. Sh. Hitesh Gangrade
7. Sh. Byas Anand
8. Sh. Priyank Arya
9. Ms. Juhi Gupta
10. Sh. Bharat B Mehta
11. Dr. V G Habbu
12. Sh. Pankaj Uppal

FSSAI Secretariat:

1. Sh. Pawan Agarwal, CEO, FSSAI- Chair
2. Sh. Kumar Anil, Advisor (Standards)
3. Dr. A. C. Mishra, Joint Director (Standards)
4. Sh. Harish R K, Assistant Director(Standards)
5. Ms. Manpreet Kour, Technical Officer (Standards)

V. Expert Committee meeting with technical institutes and experts on 20.08.2019

Expert Committee Members:

1. Sh. Pawan Agarwal, CEO, FSSAI- Chair
2. Sh. Shri V K Diundi, Scientist-F & Head(PCD), Bureau of Indian Standards (BIS)
3. Sh. Vijay Kumar Gupta, Scientist-C(PCD), Bureau of Indian Standards (BIS)
4. Dr. Pradeep Saxena, Addl DDG (PS), Director General of Health Services (DGHS)

Stakeholders:

1. Dr. Aswani Kumar Mohapatra, CIPET
2. Prof. Vimal Katiyar, IIT Guwahati
3. Sh. M Chakraborty, IIP
4. Dr. Surendra Pratap, Petroleum Conservation Research Association
5. Sh. Pradeep Tyle, Pradeep Tyle & Associates
6. Sh. Girish Behal, Ester Industries Limited
7. Sh. Jaideep Gokhale, TetraPak
8. Sh. Navdeep Mehram, TetraPak
9. Sh. Bobby Johnson, TetraPak

VI. Expert Committee meeting with co-opted members on 21.08.2019

Expert Committee Members:

1. Sh. Pawan Agarwal, CEO, FSSAI
2. Sh. Vijay Kumar Gupta, Scientist-C(PCD), Bureau of Indian Standards (BIS)
3. Dr. Pradeep Saxena, Addl DDG (PS), Director General of Health Services (DGHS)
4. Sh. Pankaj Agarwal, Scientist-E, Central Pollution Control Board (CPCB)
5. Prof. Alok Dhawan, Director, CSIR-IITR
6. Sh. Anand Kishor, Assistant Professor, NIFTEM, Ministry of Food Processing Industries

7. Sh. Avnish Tomar, Assistant Director (Packaging), CIB & RC in Directorate of Plant Protection Quarantine & Storage, Ministry of Agriculture & Farmers Welfare
8. Sh. Sanjeev Kumar, DDC(I), CDSCO
9. Dr. Aswini Kumar Mohapatra, CIPET

FSSAI Secretariat:

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7. Dr. A. C. Mishra, Joint Director (Standards)
8. Sh. Harish R K, Assistant Director(Standards)
9. Ms. Manpreet Kour, Technical Officer (Standards)

Annexure 2: Alternatives to Plastic Food Packaging

Alternatives/Case Studies	Composition	Usage
Plant-based plastics – Bioplastics A firm called Innocent (London) is making bottles from 15per cent PLA which is used for food packaging. **Source:**https://bit.ly/2yRpSsO; https://bit.ly/32ryC3m; https://bit.ly/2XYKY3N	Waste products like corn, rice; sugar feed stocks; cassava; potato etc., which is broken down into biodegradable component called Polylactic Acid (PLA).	PLA are used to make drinks bottles; various food grade containers; films
Indian Initiatives: • Bakeys Foods Pvt. Ltd., a firm that has been manufacturing spoons made from rice, millet and wheat since 2011. **Source:**https://bit.ly/2xUDyzE https://bit.ly/2JTsYyK	Rice / Millet / Wheat	Edible Spoons
• PAPPCO: is a start-up based in Mumbai which uses plant materials to manufacture disposable cutlery. The PAPPCO greenware is mainly sold through retail stores such as Star Bazaar, Reliance, and Nature's Basket all over India, and through restaurant chains. **Source:** https://www.pappcoindia.com/	Sugarcane + Bamboo + Wheat Straw	Disposable Cutleries, paper straws, dim-sum baskets, cones
• Evirocor Packaging India Pvt. Ltd. **Source**: https://bit.ly/2O3H1a3		
• Cosmos Eco Friends • **Source:**http://cosmosecofriends.com/		Pizza Boxes, Meal Boxes, Packaging Cups, Curry Boxes, Divider Packaging Box, Container Packaging Box Plates, bowls, lunch trays, food containers, clam shells, cutlery, hot/cold cups

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PLA films with different plasticizing agents (glycerol; tributyl citrate; epoxized palm etc.) with corona treatment to PLA **Source:**https://bit.ly/2XYhkYo; https://bit.ly/2JKau3r	PLA + Plasticizing Agents	Flexible films for food packaging; bottled water and juices; extruded packages; cups; lunch boxes
PLA with biopolymer (viz., PLA + Poly (butylene succinate-co-adipate) PBSA has high tensile strength). **Source:**https://bit.ly/2XYhkYo; https://bit.ly/2JKau3r	PLA + Cellulose Nanocrystals + 15 per cent Acetyl (tributylcitrate)	Flexible films for food packaging; bottled water and juices; extruded packages; cups; lunch boxes
Stone paper packaging **Source:**https://bit.ly/2xMF3Qj	Calcium Carbonate	Takeaway food cartons; beverage pouches; greaseproof paper wraps; food grade packaging
Palm leaves A Berlin start-up 'Arekapak' is presently using it for food packaging purposes. **Source:** https://arekapak.de/ Indian Initiatives: • *Kamla Natural Plates (Assam)* **Source:**https://bit.ly/2SoilaS • Somani(Hyderabad) **Source:**https://bit.ly/2Y94Tgm	Natural waste product of the areca palm leaves	Packaging for food such as fresh fruit, vegetables and nuts
Edible six-pack ring (E6PR) An American brewery store - Saltwater – is the first store to develop and use this product in Florida **Source:** https://bit.ly/30yhVkX; https://bit.ly/2XLSGim	Barley and Wheat remnants	Brewery cans
Seaweed water bubbles UK startup 'Ooho' has conceptualized and are presently using this product. The process produces 5x less CO_2 and uses 9x less Energy vs PET production. **Source:** https://bit.ly/2Y5Ma5i	Seaweeds + Plants	Flexible packaging for beverages and sauces for on the go consumption

Indian Initiatives: Workbench Projects: a Bengaluru-based startup together with 'Ooho' are making edible sachets to replace plastic bottles. **Source:**https://bit.ly/2Vi9FaU		
Microbial polyesters (PHAs) viz., Polyhydroxy Alkanoates (PHA) and **copolymer Polyhydroxy** (butyrate-co-valerate) - P(HB-co-HV) - **and fibers** (wheat straws/brewing grains/olive pomace etc.) **Source:** https://bit.ly/2YQGPMi; https://bit.ly/30DNA4r;	Microbial polyesters + PH-co-HV + Fibers	Lids; disposable food containers; plates and cups food delivery and food services; vegetable storage
PLA mixed with P(HB-co-HV) (3-hydroxybutyrate-co-3-hydroxyvakerate) **Source:**https://bit.ly/30DNA4r	P(HB-HV) + PLA	Lids; disposable food containers; plates and cups food delivery and food services
Bioplastic made from Prickly Pear Cactus **Source:**https://bit.ly/2XT8ATl; https://bbc.in/2It2xix	Cactus Juice + Non-toxic Additives	Disposable food boxes, containers; cups and cutlery
Milk Plastic made from milk protein (casein). 'Lactips' a French based company uses biosourced material (milk protein) as a packaging material for food & beverage industries. **Source:**https://bit.ly/2JPHAkl	Milk Protein + Clay + Reactive Molecule (glyceraldehyde)	Bioplastic films; cups and cutlery
Wood Pulp Cellophane is made from wood pulp and is FSC (Forest Stewardship Council) certified. NatureFlex, a Calafornia based stat-up, uses films that are made from cellulose. **Source:**https://bit.ly/2JMja9F https://bit.ly/2XPqhaX	Wood Pulp	Cellophane can be used in chocolate and confectionery; fresh produce and dairy; and barrier for bakery, snacks, coffee, tea, chocolate as well as home and personal care items

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ANNEXURE R12/9

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2015

Life Cycle Assessment of Beverage Carton

TETRA PAK INDIA PVT LIMITED

THINKSTEP SUSTAINABILITY SOLUTIONS PVT LIMITED, INDIA

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Acronyms

Abbreviation	Explanation
ACE	Alliance for Beverage Cartons & the Environment
CML	Institute for Environmental Sciences, Leiden University, The Netherlands
CO_2	Carbon Dioxide
DCBe	Dichlorobenzene equivalent
EoL	End of Life
GaBi	Ganzheitliche Bilanzierung (German for holistic balancing)
GHG	Greenhouse Gases
GWP	Global Warming Potential
HDPE	High Density Polyethylene
HTP	Human Toxicity Potential
ISO	International Organization for Standardization
LCI	Life cycle inventory
LCIA	Life cycle impact assessment
PCCs	Post-Consumer Tetra Pak Cartons
PED	Primary Energy Demand
PE-LLD	Linear Low Density Polyethylene
POCP	Photochemical Ozone Creation Potential
SO_2	Sulphur Dioxide
TERI	The Energy and Resource Instituite

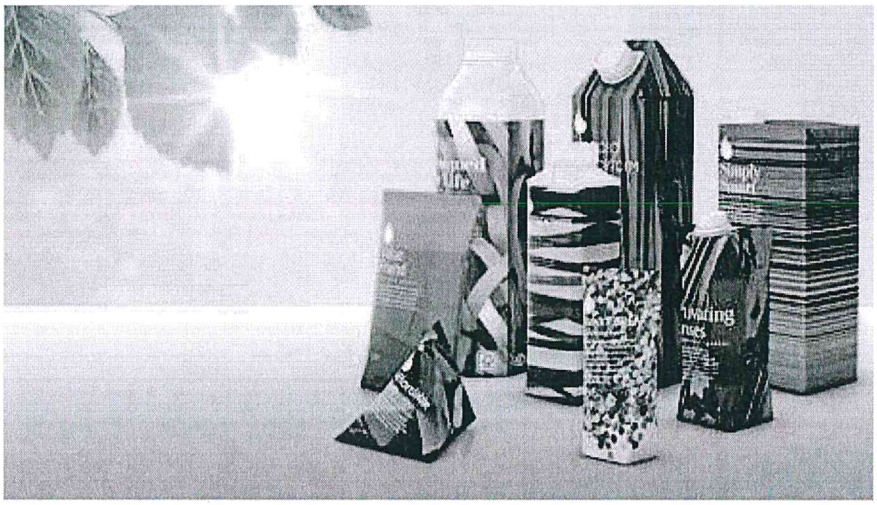
1 Introduction

Tetra Pak is a multinational food packaging and processing company of Swedish origin with head offices in Lund, Sweden, and Lausanne, Switzerland. The company offers packaging solutions, filling machines and processing solutions for dairy, beverages, cheese, ice-cream and prepared food, including distribution tools like accumulators, cap applicators, conveyors, crate packers, film wrappers, line controllers and straw applicators.

Tetra Pak® is the world's leading food processing and packaging solutions company. Working closely with our customers and suppliers, it provides safe, innovative and environmentally sound products that each day meet the needs of hundreds of millions of people.

Tetra Pak offers complete carton packaging range for consuming fresh products. All their packages offer consumer convenience, easy opening, optimal shelf life.

The objective of this study is to understand & document by facts and figures the actual environmental performance of Tetra Pak beverage carton from life cycle perspective and compare different post-consumer end of life scenarios practiced in India. The key environmental impact indicators identified are primary energy consumption, GHG emissions, acidification potential, ozone depletion potential, and photochemical ozone creation potential.



This study focusses on the Indian scenario for recycling of Tetra Pak carton. The data has been retrieved from the study conducted by The Energy and Resource Institute (TERI) for the various activities for collection and recycling of these Post Consumer Tetra Pak Cartons (PCCs) and the work taken up with various NGO's and the waste picker workforce to segregate PCCs in India.

The Tetra Pak carton is primarily made up of Paper (75% by weight) and the rest is polyethylene-aluminium (25%). With the aim to ensure that the PCCs are retrieved and recycled responsibly and that no carton ends up at the landfill, Tetra Pak has taken up several studies in the past in this regard.

The life cycle assessment has been carried out following the ISO 14040 and ISO 14044 by modelling different life cycle stages of Tetra Pak beverage carton using life cycle assessment software GaBi 6 developed by thinkstep AG (formerly PE International AG).

2 Goal and Scope of the Study

2.1 Goal of the Study

The goal of the study is to analyse the life cycle environmental performance of beverage carton and compare different post-consumer end of life scenarios practiced in India.

The life cycle stages of product systems that were studied included:

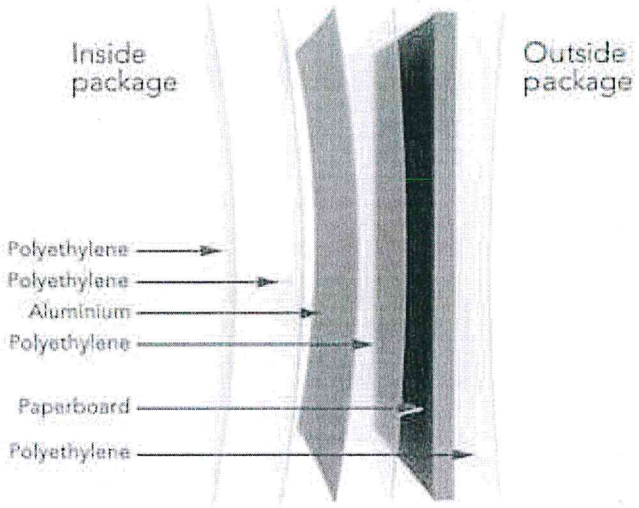
- Cradle-to-gate production of raw and relevant ancillary materials needed for the manufacture of beverage carton,
- Transports of relevance over the life cycle of the beverage carton under study,
- Manufacture of beverage carton,
- End-of-life of beverage carton covering recycling and disposal.

An additional goal of the study is to "compare the LCIAs of beverage carton with container glass based on publicly available information.

2.2 Scope of the study

2.2.1 System Description Overview

Beverage Carton is made of paperboard laminated with a multilayer polymer film and a layer of aluminium foil (shown in Image).



The LCA methodology applied to this study comprises of an evaluation of environmental impacts of all the activities associated with extraction of raw materials necessary for production, transportation of raw material, production of packaging, and end-of-life viz. recycling and landfilling.

2.2.2 Functional Unit

A common reference has been used as the functional unit for this study. The functional unit allows quantification of the environmental impacts of the production procedure for refrigerator making format over its entire life cycle. These environmental impacts are calculated on the basis of the functional unit wherein each flow related to material consumption, energy consumption, emissions, effluent and waste is scaled to the reference flow.

The functional unit for this study is –

1 beverage carton of 180 ml volume

2.2.3 System Boundary

The system boundary of the beverage carton is shown in Figure 1.

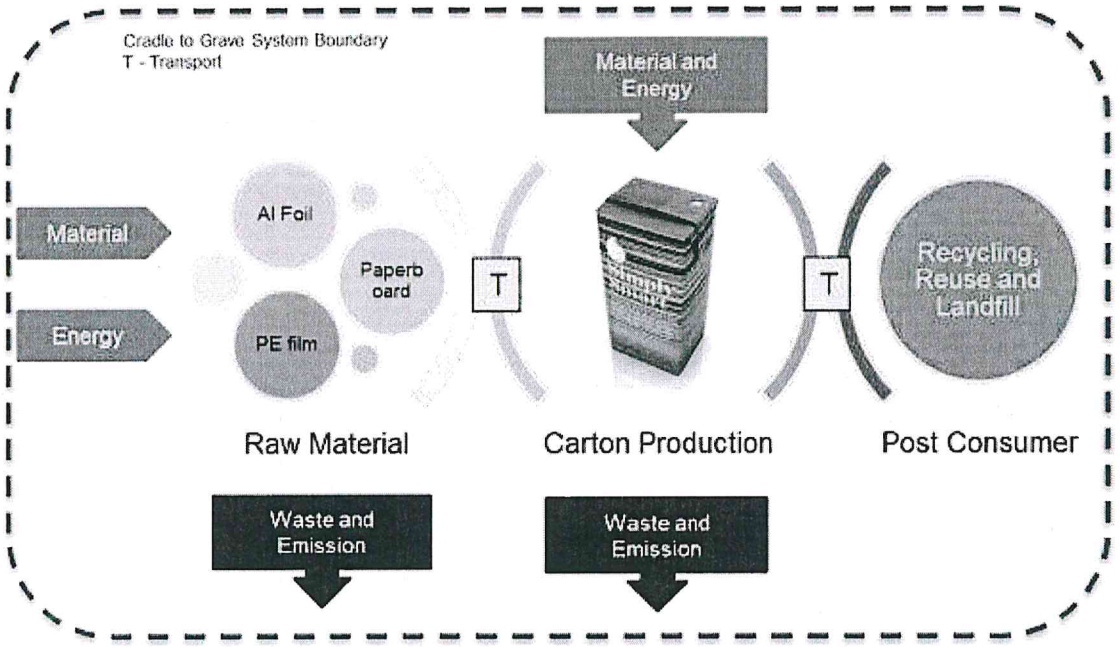


Figure 1: System Boundary for Tetra Pak Beverage Carton

Table 1 summarizes those processes that are included within the system boundaries of the study.

Table 1: Details of system boundary included in the study

Life Cycle stages	Life Cycle sub-stages	Definitions
Primary packaging	Primary packaging raw materials production	Extraction, production of the raw materials to the primary packaging producer
	Packaging Formation (converting)	Energy, water and raw materials used in the process of formation of the primary packaging production and combustion during converting
	Printing ink	Extraction and production of the raw materials of the printing ink
Upstream Transport	_	Transport of the raw materials for primary and secondary packaging, closure and label.
Downstream Transport	--	Transport of primary packaging from user
		Transport of secondary packaging from retailer to End of life
End of life	Landfill	Primary packaging and recycling treatment plant
	Recycle	Primary packaging
	Open burning	Primary packaging

The study includes upstream processing and production of materials and energies that make up the production of the stated functional unit, transport of materials to production sites, transport to customers, and end-of-life disposal.

Activities that have been excluded from the assessment are summarised in Table 2.

Table 2: Activities outside the scope of this study

Activity	Reason for exclusion
Construction of capital equipment, furnace rebuild (refractories) and moulds	It is expected that these impacts will be very small when allocated across the full production volume of packaging (hence can be excluded under the cut-off rules defined in section 3.4)
Maintenance and operation of support equipment	It is expected that these impacts will be very small when allocated across the full production volume of packaging (hence can be excluded under the cut-off rules defined in section 3.4)
Human labour and employee transport	These aspects are not the central focus of the study and are not easily attributable to product impacts
Filling process	Filling has been excluded from this study since it is independent from the finished container
Secondary and Tertiary packaging	These aspects are not the central focus of the study
Individual transport to consumer	This may vary greatly from consumer to consumer. It is common practise in LCA studies to omit this stage from the assessment
Use of product	Product use and refrigeration or other processing are not considered

3 Methodology

3.1 Selection of LCIA Methodology and Types of Impacts

CML 2001 (Nov 2010) method has been selected for evaluation of environmental impacts developed by Institute of Environmental Sciences, Leiden University, Netherlands. These indicators are scientifically and technically valid. Furthermore, they are relevant from the environmental point of view and provide a multi-criterion approach to the environmental issues. These indicators are widely used and accepted by the international community of LCA experts.

A set of environmental indicators were investigated: primary energy demand, global warming potential, eutrophication potential, acidification potential, photochemical ozone creation potential (smog formation potential) and human toxicity . Explanations of different impact assessment indicators results are given in Annex A.

Table 3: Impact Assessment Category Descriptions

Impact Category	Description	Unit	Reference
Global Warming Potential (GWP)	A measure of greenhouse gas emissions, such as CO_2 and methane. These emissions are causing an increase in the absorption of radiation emitted by the earth, increasing the natural greenhouse effect. This may in turn have adverse impacts on ecosystem health, human health and material welfare.	kg CO_2 equivalent	[Guinée 2001]
Eutrophication Potential	Eutrophication covers all potential impacts of excessively high levels of macronutrients, the most important of which nitrogen (N) and phosphorus (P). Nutrient enrichment may cause an undesirable shift in species composition and elevated biomass production in both aquatic and terrestrial ecosystems. In aquatic ecosystems increased biomass production may lead to depressed oxygen levels, because of the additional consumption of oxygen in biomass decomposition.	kg Phosphate equivalent	[Guinée 2001]
Acidification Potential	A measure of emissions that cause acidifying effects to the environment. The acidification potential is a measure of a molecule's capacity to increase the hydrogen ion (H+) concentration in the presence of water, thus decreasing the pH value. Potential effects include fish mortality, forest decline and the deterioration of building materials.	kg SO_2 equivalent	[Guinée 2001]
Photochemical Ozone Creation Potential (POCP)	A measure of emissions of precursors that contribute to ground level smog formation (mainly ozone, O_3), produced by the reaction of VOC and carbon monoxide in the presence of nitrogen oxides under the influence of UV light. Ground level ozone may be	kg ethene equivalent	[Guinée 2001]

Impact Category	Description	Unit	Reference
	injurious to human health and ecosystems and may also damage crops.		
Human Toxicity Potential (HTP inf.)	A measure of toxic emissions directly harmful to the health of humans and other species.	Kg DCB equivalent	[Guinée 2001]

Table 4 Other Environmental Indicators

Indicator	Description	Unit	Reference
Primary Energy Demand (PED)	A measure of the total amount of primary energy extracted from the earth. PED is expressed in energy demand from non-renewable resources (e.g. petroleum, natural gas, etc.) and energy demand from renewable resources (e.g. hydropower, wind energy, solar, etc.). Efficiencies in energy conversion (e.g. power, heat, steam, etc.) are taken into account.	MJ (net calorific value)	[Guinée 2001]

3.2 Data Collection

The data for beverage carton was collected from the study conducted by the Alliance for Beverage Cartons & the Environment (ACE) for the "LCI dataset for converting of beverage carton packaging material (September 2009)[1]" modelled as Indianised GaBi dataset[2] with some measured data[3]. The data has been tabulated in Annex.

The Indian scenario for Post-Consumer Tetra Pak Cartons (PCCs) Management has been studied by The Energy and Resource Institiute (TERI) and articulately represented in the report[4].

All data from the GaBi databases 2011 were created with consistent system boundaries and upstream data. thinkstep expert judgment and advice was used in selecting appropriate datasets to model the materials and energy for this study and has been noted in the preceding sections. Detailed database documentation for GaBi datasets can be accessed at http://www.gabi-software.com/support/gabi/gabi-6-lci-documentation/ and http://database-documentation.gabi-software.com/support/gabi/gabi-database-2013-lci-documentation/.

[1] LCI dataset for converting of beverage carton packaging material
[2]http://gabi-dataset-documentation.gabi-software.com/xml_data/processes/90a3b10d-83cc-4bc7-a715-991e2ea786ad_01.00.000.xml
[3] The weight and the surface area of the beverage carton was measured precisely to obtain the total weight per area ratio
[4] T E R I. 2011; Post Consumer Tetra Pak Cartons (PCCs) Management ; New Delhi: The Energy and Resources Institute. 79 pp. [Project Report No. 2011 EE 01]

The data collected for material & energy sources mentioned in Annex A.

The flow diagram on inventory analysis step of LCA is given in Figure 2 and depicts the process of life cycle inventorisation to life cycle impact evaluation. First the life cycle inventory of any flow of unit process is prepared, checked for consistency and plausibility, converted to the functional unit and finally inventory data is characterized to the respective environmental impact categories. Each of the inventory flows characterized to the respective impact categories is finally aggregated.

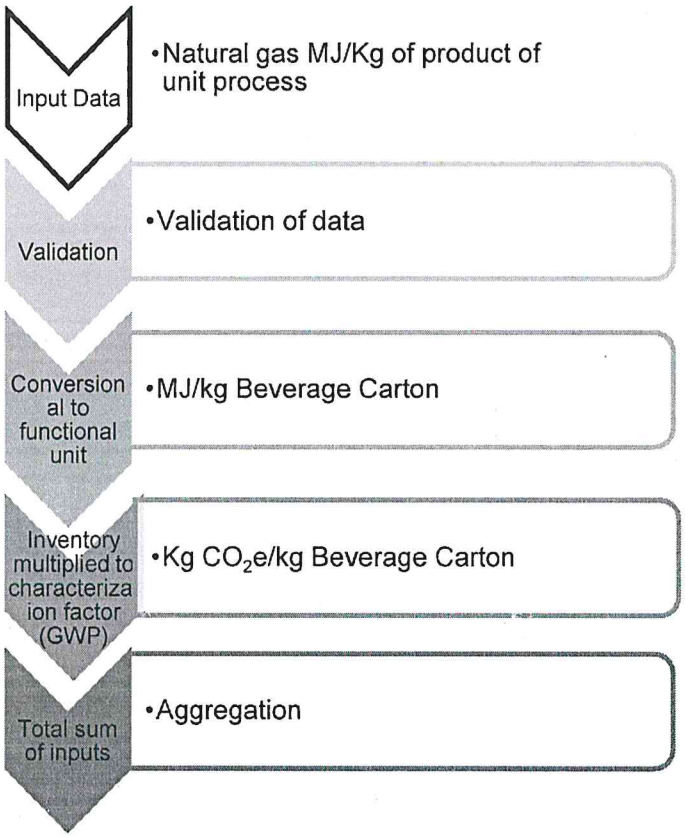


Figure 2: Flow Diagram on Life Cycle Inventory Analysis

3.3 Beverage Carton Life Cycle Stages

Data for the manufacturing of beverage carton were taken from various secondary sources as mentioned in section 3.2. The provided data represent the energies, auxiliary materials and process materials needed as well as the emissions related to the production process.

The flow sheet of beverage carton production, transport, EoL is shown in

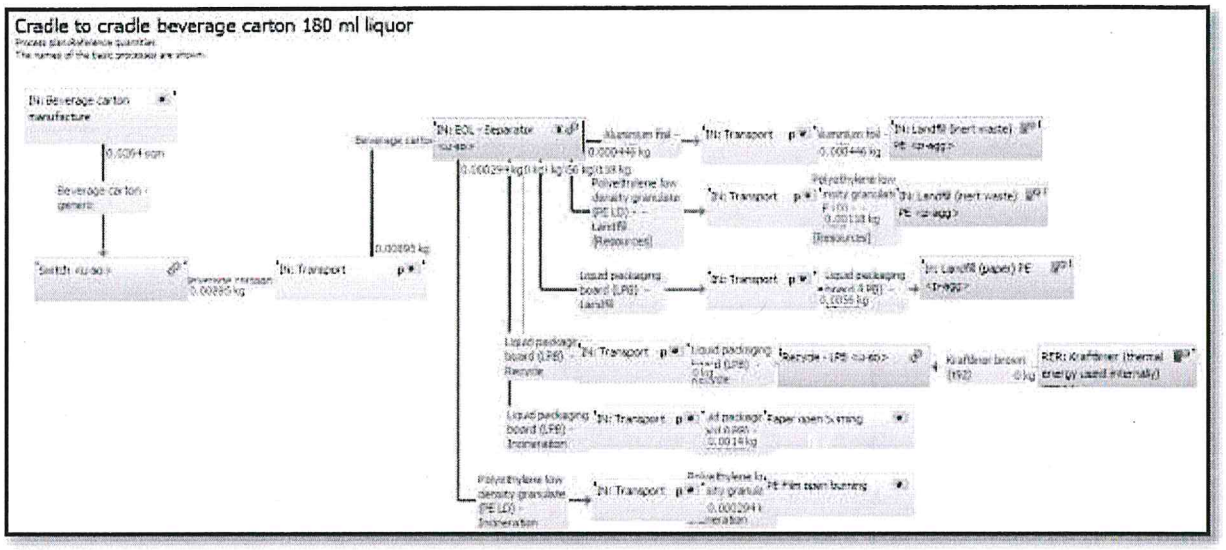


Figure 3: GaBi model for Cradle to Grave of beverage carton

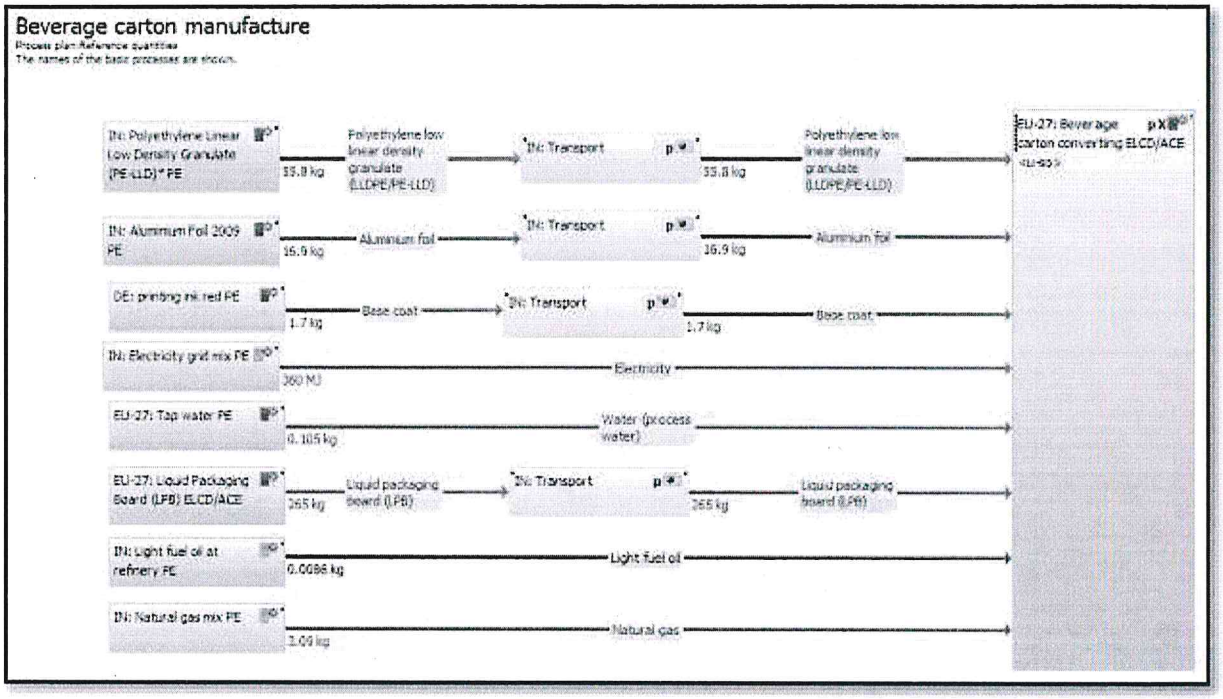


Figure 4: GaBi model for beverage carton manufacturing

3.4 Assumptions and Limitations

- No exceptions to the scope of this study on beverage carton are given
- Beverage carton dataset was adapted to the Indian scenario by considering Indian fuel and energy mix but restricting to the prevailing technology in the European region.

- System components that comprise less than one percent of total system weight were excluded. This cut-off assumption is based on past LCI studies, which demonstrate that materials that comprise less than one percent of system weight have a negligible effect on the LCI results.

- Assumptions for the collection and recycling practices of PCCs in the major cities in South Asia, were based on the study was commissioned to The Energy and Resources Institute (TERI) in April 2011[5]

3.5 Software and Database

The LCA model was created using the GaBi 6 Software system for life cycle engineering, developed by PE International AG. The GaBi database provides the life cycle inventory data for several of the raw and process materials obtained from the upstream system. Detailed database documentation for GaBi datasets can be accessed at http://www.gabi-software.com/support/gabi/gabi-lci-documentation/data-sets-by-database-modules/professional-database/ and http://database-documentation.gabi-software.com/support/gabi/gabi-lci-documentation/data-sets-by-database-modules/extension-databases/.

[5] T E R I. 2011; Post Consumer Tetra Pak Cartons (PCCs) Management ; New Delhi: The Energy and Resources Institute. 79 pp. [Project Report No. 2011 EE 01]

4 System studied

4.1 Data Collection and Data Management

The data used for studies was evaluated from secondary sources as previously noted in section 3.2.

4.2 Data and Database used

The Electricity details are used specific to the country where the processes have taken place. Table below shows the description of inventory and the source used is GaBi 6 database 2011.

Table 5: Life Cycle Inventory for Energy

Location	Description of the inventory	Source	Representativeness
	Electricity, low voltage, at grid inventories		
India	IN: Electricity grid mix PE	GaBi 6 DataBase 2011	Indian Grid Mix (Hard coal 66.1%, Hydro 13.8%, Natural gas 9.9%, Heavy fuel oil 4.1%, lignite 2.2%, Others 3.9%)
India	IN: Natural gas mix PE	GaBi 6 DataBase 2011	India
India	IN: Light fuel oil (LFO) PE	GaBi 6 DataBase 2011	India
India	IN: Diesel mix at refinery PE	GaBi 6 DataBase 2011	India

4.2.1 Life Cycle Inventories of Materials

The description of the inventories of materials in the study is described in this section. Below table shows the materials along with the description of the inventory. For beverage carton materials, closures and labels materials (like aluminium, HDPE, cardboard, paper etc) details are mentioned in the Annex A.

Table 6: Life Cycle Inventory for Material

Material	Description of the inventory	Source	Representative-ness
Cardboard for beverage carton	Liquid packaging board production, at plant	GaBi 6 DataBase 2011	Europe
Aluminium sheet [Metals] for Beverage carton	Aluminium	GaBi 6 DataBase 2011	India
Polyethylene low density granulate (PE LD) [Plastics]] for Beverage carton	Polyethylene low density	GaBi 6 DataBase 2011	India

4.2.2 Life cycle inventories of material transformation

Table 7: Life Cycle Inventory for Material Transformation

Materials	Description of the inventory	Source	Representativeness
	Primary packaging, main container materials		
Beverage Carton	Aluminium foil, paper and polyethylene are converted to beverage carton. European database for the manufacturing process has been adapted to Indian scenario with the use of India specific energy, fuel and material mix.		India

4.2.3 End of Life Inventories

Landfilling of corrugated cardboard, liquid packaging board are modelled based on German landfill model (paper in municipal waste) where in the input specifications were set to paper composition (good data basis) and no landfill gas is incinerated or used for energy recovery. Aluminium foil and polyethylene low density film are modelled based on landfill of inert waste as these are not biodegradable.

Table 8: Life Cycle Inventories for End of Life

End of Life	GaBi 6 Database 2011, India
Beverage Carton- Liquid packaging board	Disposal, Beverage Carton - Liquid packaging board, 80% to landfill for paper/IN and 20% in open burning
Representatives >India, Source: GaBi Professional Database, India /2011 .	

End of Life - Scenario 1	GaBi 6 Database 2011, India
Beverage Carton- Liquid packaging board	Disposal, Beverage Carton - Liquid packaging board,71% to landfill for paper/IN and 29% in recycling
Representatives >India, Source: T E R I. 2011 Post Consumer Tetra Pak Cartons (PCCs) Management New Delhi: The Energy and Resources Institute. 79 pp. [Project Report No. 2011 EE 01]	

End of Life - Scenario 2	GaBi 6 Database 2011, India
Beverage Carton- Liquid packaging board	Disposal, Beverage Carton - Liquid packaging board,65% to landfill for paper/IN and 35% in recycling
Representatives >India, Source: T E R I. 2011 Post Consumer Tetra Pak Cartons (PCCs) Management New Delhi: The Energy and Resources Institute. 79 pp. [Project Report No. 2011 EE 01]	

4.2.4 Life Cycle Inventories Used for Transport

Transport is an important parameter for transporting raw materials, SKU from the production site to distributers and to retailers and finally the waste from each sites for disposal and recycled as per the materials.

The road transport model is being used with specific load capacity of 12-14 tons for which the database used is GaBi 6 database 2011. The default utilization rate of 85% is considered. The details of transport are mentioned in Table 9. A schematic diagram of transport of various packaging options also shown in Figure 4.

Table 9: Life Cycle Inventories Used for Transport

Material – Beverage Carton Manufacture	km	Transport medium
IN: Polyethylene Linear Low Density Granulate (PE-LLD)* PE	100	Euro 3, Truck: 12-14t gross weight / 9,3t payload capacity
IN: Aluminium Foil 2009 PE	100	Euro 3, Truck: 12-14t gross weight / 9,3t payload capacity
DE: Printing ink red PE	100	Euro 3, Truck: 12-14t gross weight / 9,3t payload capacity
EU-27: Liquid Packaging Board (LPB) ELCD/ACE	100	Euro 3, Truck: 12-14t gross weight / 9,3t payload capacity
EU-25: Corrugated board boxes ELCD/FEFCO	100	Euro 3, Truck: 12-14t gross weight / 9,3t payload capacity

Material - BC	from	to	km	Transport medium
Beverage Carton [Resources]	Beverage carton manufacture	End of life - Landfill	100	Euro 3, Truck: 12-14t gross weight / 9,3t payload capacity

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5 Results – Tetra Pak Carton

5.1 LCIA for Beverage carton

Table 10 shows the breakdown of environmental impacts of beverage carton.

Table 10: Breakdown of Life Cycle Environmental Impacts of Beverage Carton

Impact Category	Cradle to cradle beverage carton	Primary Packaging	Upstream transport	Downstream transport	Disposal and Recycling
Acidification Potential (AP) [kg SO2-Equiv.]	1.78E-04	1.24E-04	4.40E-07	1.76E-06	5.28E-05
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	2.12E-05	1.22E-05	9.67E-08	3.86E-07	8.54E-06
Global Warming Potential (GWP 100 years) [kg CO2-Equiv.]	1.20E-02	-3.05E-03	6.92E-05	2.76E-04	1.47E-02
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	1.16E-02	5.97E-03	2.17E-06	8.66E-06	5.60E-03
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	1.41E-05	9.30E-06	-1.65E-07	-6.60E-07	5.65E-06
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	5.56E-05	3.75E-05	1.71E-08	6.83E-08	1.80E-05
Primary energy demand from ren. and non ren. resources (net cal. value)[MJ]	7.39E-01	7.25E-01	9.99E-04	3.99E-03	8.28E-03

The global warming potential for beverage carton is 1.2E-02 kg CO_2-equiv. out of which the major contribution is 1.47E-02 kg CO_2-equiv. from disposal and recycling and 2.76E-04 kg CO_2-equiv. from downstream transport. Similarly, the acidification potential is 1.78E-04 kg SO_2-equiv. out of which the major contribution is 1.2E-04 kg SO_2-equiv. from primary packaging and 5.28E-05 kg SO_2-equiv. from disposal and recycling stage. The eutrophication potential is 2.12E-05 kg phosphate-equiv. out of which the major contribution is 1.22E-05 kg phosphate-equiv. from primary packaging and 8.54E-06 kg phosphate-equiv. from disposal and recycling stage. The major contribution to photochemical ozone creation potential is 9.3E-06 kg ethene-equiv. from primary packaging. The primary energy demand is 0.739 MJ out of which the major contribution is 7.2E-01 MJ from primary packaging. The human toxicity potential is 1.16E-02 kg DCB-equiv. out of which the major contribution is 5.97E-03 kg DCB-equiv. from primary packaging and 5.6E-03 kg DCB-equiv. from disposal and recycling. The terrestric ecotoxicity potential is 5.56E-05 kg DCB-equiv. out of which the major contribution is 3.75E-05 kg DCB-equiv. from primary packaging and 1.80E-05 kg DCB-equiv. from disposal and recycling.

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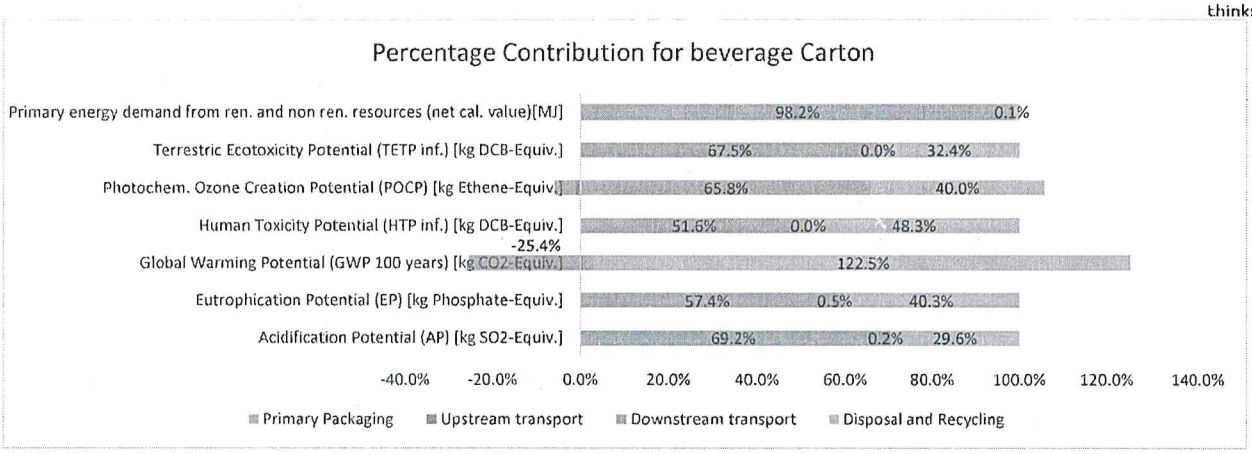

Figure 5: Percentage Contribution for Beverage Carton

Figure 5 shows the percentage contribution for beverage carton. The major contributor to all the environmental impact categories is primary packaging except global warming potential. Primary packaging contributes 69.2% to acidification potential, 57.4% to eutrophication potential, -25.4% to global warming potential, 65.8% to photochemical ozone creation potential and 98.2% to primary energy demand. Disposal and recycling stage contributes 29.6% to acidification potential, 40.3% to eutrophication potential, 122.5% to global warming potential, 40% to photochemical ozone creation potential and 1% to primary energy demand. Other stages of beverage carton value chain are contributing less than 10% to the overall results of the various environmental impact categories. The high value of global warming potential in disposal and recycling stage is because of landfill of liquid packaging board, which produces methane.

Table 11: Breakdown of Cradle-to-gate Environmental Impacts of Primary Packaging for Beverage Carton

Impact Category	Primary packaging beverage carton 180 ml liquor	Printing ink red	Beverage carton converting	Liquid Packaging Board (LPB)	Aluminum Foil	Electricity grid mix	Light fuel oil at refinery	Natural gas mix	Polyethylene Linear Low Density Granulate	Tap water

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Acidification Potential (AP) [kg SO2-Equiv.]	1.24E-04	1.17E-06	1.04E-07	2.57E-05	3.94E-05	3.74E-05	1.03E-09	2.83E-07	1.94E-05	1.53E-12
	100.0%	1.0%	0.1%	20.8%	31.9%	30.3%	0.0%	0.2%	15.7%	0.0%
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	1.22E-05	3.95E-08	2.74E-08	6.40E-06	1.96E-06	2.22E-06	4.12E-11	1.86E-08	1.48E-06	5.76E-13
	100.0%	0.3%	0.2%	52.7%	16.2%	18.3%	0.0%	0.2%	12.2%	0.0%
Global Warming Potential (GWP 100 years) [kg CO2-Equiv.]	-3.05E-03	1.97E-04	2.14E-04	-1.70E-02	5.66E-03	4.13E-03	1.24E-07	4.14E-05	3.74E-03	1.24E-09
	100.0%	-6.5%	-7.0%	559.4%	-185.8%	-135.8%	0.0%	-1.4%	-123.0%	0.0%
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	5.97E-03	4.23E-06	3.10E-07	1.88E-04	3.89E-03	1.44E-03	1.87E-08	7.15E-06	4.43E-04	3.10E-11
	100.0%	0.1%	0.0%	3.2%	65.2%	24.0%	0.0%	0.1%	7.4%	0.0%
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	9.30E-06	1.94E-07	4.33E-07	1.87E-06	2.49E-06	1.86E-06	1.26E-10	3.94E-08	2.42E-06	3.05E-13
	100.0%	2.1%	4.7%	20.1%	26.8%	20.0%	0.0%	0.4%	26.0%	0.0%
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	3.75E-05	2.20E-06	5.35E-09	1.31E-06	1.85E-05	1.11E-05	2.12E-10	6.96E-08	4.32E-06	2.26E-12
	100.0%	5.9%	0.0%	3.5%	49.4%	29.6%	0.0%	0.2%	11.5%	0.0%
Primary energy demand from ren. and non ren. resources (net cal. value)[MJ]	7.25E-01	4.67E-03	0.00E+00	4.65E-01	8.70E-02	4.72E-02	1.15E-05	4.34E-03	1.17E-01	9.85E-09
	100.0%	0.6%	0.0%	64.1%	12.0%	6.5%	0.0%	0.6%	16.1%	0.0%

The global warming potential for primary packaging of beverage carton is -3.0E-03 kg CO_2-equiv. out of which the major contribution is 4.1E-03 from electricity consumption and 3.7E-03 kg CO_2-equiv. from PE-LLD granulate. Similarly, the acidification potential is 1.2E-04 kg SO_2-equiv. out of which the major contribution is 3.9E-05 kg SO_2-equiv. from aluminum foil and 3.8E-05 kg SO_2-equiv. from electricity grid mix. The eutrophication potential is 1.2E-05kg phosphate-equiv. out of which the major contribution is 6.4E-06 kg phosphate-equiv. from liquid packaging board and 2.2E-06 from electricity consumption. The photochemical ozone creation potential is 9.3E-06 kg ethene-equiv. out of which the major contribution is 2.49E-06 kg ethene-equiv. from aluminum foil and 2.5E-06 from PE-LLD granulates. The primary energy demand is 7.3E-01MJ out of which the major contribution is 0.465 from liquid packaging board and 4.7E-01 from PE-LLD granulates. The human toxicity potential is 6.0E-03 kg DCB-equiv. out of which the major contribution is 3.9E-03 kg DCB-equiv. from aluminum foil and 1.4E-03 kg DCB-equiv. from electricity grid mix. The terrestric

ecotoxicity potential is 3.8E-05 kg DCB-equiv. out of which the major contribution is 1.9E-05 kg DCB-equiv. from aluminum foil 2009 and 1.1E-05 kg DCB-equiv. from electricity grid mix. Table 12 shows the breakdown of environmental impacts of disposal & recycling for beverage carton in India.

Table 12: Breakdown of Environmental Impacts of Disposal & Recycling for Beverage Carton

Impact Category	Disposal and Recycling beverage carton 180 ml liquor	Paper open burning	PE Film open burning	Landfill (Al foil)	Landfill (LPB)	Landfill (PE LD)
Acidification Potential (AP) [kg SO2-Equiv.]	5.28E-05	3.28E-05	1.78E-05	1.10E-07	1.80E-06	2.89E-07
	100%	62%	34%	0%	3%	1%
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	8.54E-06	3.66E-06	1.99E-06	1.16E-08	2.84E-06	3.07E-08
	100%	43%	23%	0%	33%	0%
Global Warming Potential (GWP 100 years) [kg CO2-Equiv.]	1.47E-02	1.79E-03	8.06E-04	2.70E-05	1.20E-02	7.13E-05
	100%	12%	5%	0%	82%	0%
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	5.60E-03	3.58E-03	1.98E-03	1.98E-06	3.39E-05	5.22E-06
	100%	64%	35%	0%	1%	0%
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	5.65E-06	1.39E-06	7.55E-07	1.17E-08	3.47E-06	3.09E-08
	100%	25%	13%	0%	61%	1%
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	1.80E-05	1.06E-05	1.10E-06	2.58E-07	5.29E-06	6.81E-07
	100%	59%	6%	1%	29%	4%
Primary energy demand from ren. and non ren. resources (net cal. value)[MJ]	8.28E-03	0.00E+00	0.00E+00	4.15E-04	6.76E-03	1.10E-03
	100%	0%	0%	5%	82%	13%

The global warming potential for disposal and recycling of beverage carton is 1.47E-02 kg CO_2-equiv. out of which the major contribution is 1.2E-02 kg CO_2-equiv. from landfill of liquid packaging board and 1.79E-03 kg CO_2-equiv. from open burning of paper. Similarly, the acidification potential is 5.28E-05 kg SO_2-equiv. out of which the major contribution is 3.28E-05 kg SO_2-equiv. from paper open burning and 1.78E-05 kg SO_2-equiv. from PE-film open burning. The eutrophication potential is 8.54E-06 kg phosphate-equiv. out of which the major contribution is 3.66E-06 kg phosphate-equiv. from paper open burning and 2.84E-06 kg phosphate-equiv. from landfill of liquid packaging board. The photochemical ozone creation potential is 5.65E-06 kg ethene-equiv. out of which the major contribution is 3.47E-06 kg ethene-equiv. from landfill of liquid packaging board and

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1.39E-06 kg ethene-equiv. from paper open burning. The primary energy demand is 8.28E-03 MJ out of which the major contribution is 6.76E-03MJ from landfill of liquid packaging board. The human toxicity potential is 5.6E-03 kg DCB-equiv. out of which the major contribution is 3.6E-03 kg DCB-equiv. from paper open burning and 2.0E-03 kg DCB-equiv. from PE film open burning. The terrestric ecotoxicity potential is 1.8E-05 [kg DCB-equiv.] out of which the major contribution is 1.06E-05 [kg DCB-equiv.] from paper open burning and 5.29E-06 [kg DCB-equiv.] from landfill (LPB).

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5.2 Scenario Analysis

The introduction to TERI project is mentioned below verbatim:

With the overarching objective to explore the collection and recycling practices of PCCs in the major cities in South Asia, a study was commissioned to The Energy and Resources Institute (TERI) in April 2011. Following were the major objectives of the study:

- Study the current quantum of Tetra Pak cartons getting procured/ retrieved at the waste dealers' level.
- Assess the actual quantum of Tetra Pak cartons reaching the paper mills which recycle paper from low grade paper waste.
- Understand the value chain and the economics involved in Tetra Pak cartons collection and recycling.
- Gauge, what critical stakeholders (low grade paper waste dealers and recycling paper mills) believe, is needed to upscale collection and recycling – economics, awareness,infrastructure etc.

The scope of work included a questionnaire survey of the key stakeholders (rag pickers, small and large kabadiwalas (junk dealers), low grade paper waste dealers and waste paper based paper mills). The sample size was kept to be 30 comprising of at least 10 rag pickers, 7 small level kabadiwalas, 7 medium level kabadiwalas, 5 large scale low grade paper waste dealers and 1 waste paper based paper mill. The questionnaire was prepared by TERI and after an exhaustive inhouse deliberation and discussion with Tetra Pak, it was provided to the survey partners.

From the data for post-consumer behavior this report calculates the recycling rates of waste paper according the assumption that informal sector[6] recovers 30% and 40% of the total waste paper generated in 11 major cities. An average of 28.78% and 35.07% was calculated as the total recycling rate for the considered recovery rate. The rest of the waste paper is directed towards landfill in both the scenarios. This data has been modelled and the environmental impact results considering the recycling rate has been tabulated below:

Scenario 1 depicts 30% recovery rate resulting in *28.78% recycling* and **Scenario 2** depicts 40% recovery rate resulting in *35.07% recycling*.

Table 13: Scenario Analysis for different recycling rates

Impact Category	Base Scenario	Scenario 1	Scenario 2
Acidification Potential (AP) [kg SO2-Equiv.]	1.78E-04	1.44E-04	1.43E-04
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	2.12E-05	1.66E-05	1.63E-05
Global Warming Potential (GWP 100 years) [kg CO2-Equiv.]	1.20E-02	8.99E-03	8.07E-03
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	1.16E-02	7.98E-03	7.97E-03
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	1.41E-05	1.20E-05	1.16E-05
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	5.56E-05	4.09E-05	3.97E-05
Primary energy demand from ren. and non ren. resources (net cal. value)[MJ]	7.39E-01	7.11E-01	7.04E-01

[6] This includes rag pickers, small and large kabadiwalas low grade paper waste dealers and waste paper based paper mills

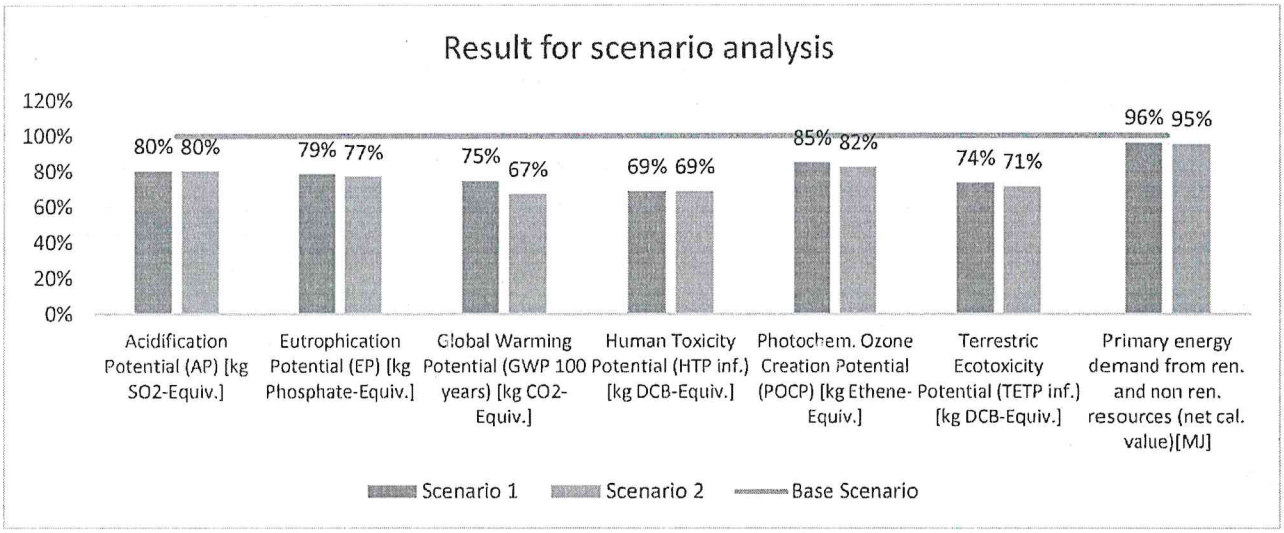

Figure 6: Percentage comparison for scenario analysis

A decline in the impact categories has been observed for both the recycling scenario. The indicators shows saving in the range of 15% to 31% except primary energy demand for Scenario 1 and savings in the range of 18% to 31% for Scenario 2. The breakup of the impact categories is shown below:

Table 14: Percentage reduction for scenario analysis

Impact Category	**Cradle to cradle beverage carton 180 ml liquor**	**Disposal and Recycling**	**Downstream transport**	**Primary Packaging**	**Upstream transport**
GWP Base Case	1.20E-02	1.47E-02	2.76E-04	-3.05E-03	6.92E-05
GWP Scenario 1	8.99E-03	1.16E-02	3.39E-04	-3.05E-03	6.92E-05
% Reduction	25%	21%	-23%	0%	0%
GWP Scenario 2	8.07E-03	1.07E-02	3.52E-04	-3.05E-03	6.92E-05
% Reduction	33%	27%	-27%	0%	0%

The reduction in the impact categories is due to the shift in the end of life disposal method. The process of recycling the beverage carton offsets the emissions as it prevents the use of virgin raw materials by replacing it with waste paper. An overall reduction of 25% and 33% has been observed for 28.78% and 35.07% recycling rates, respectively.

6 Life Cycle Assessment Study of Beverage Carton and its comparison with container glass based on publicly available information

Tetra Pak, India has conducted screening Life Cycle Assessment study of beverage carton for cradle to grave perspective through PE Sustainability Solutions Pvt Ltd a subsidiary of Thinkstep AG, Germany. The study was intended to gain insight in the current environmental impacts for beverage carton and its comparison to container glass based on publicly available information. Bill of material of beverage carton was also collected from public available sources for the Tetra Pak study.

The data for beverage carton was collected from the study conducted by the Alliance for Beverage Cartons & the Environment (ACE) for the "LCI dataset for converting of beverage carton packaging material (September 2009)[7]" modelled as Indianised GaBi dataset[8] with some measured data[9]. The data has been tabulated in Annex. No secondary packaging has been considered.

The Indian scenario for Post-Consumer Tetra Pak Cartons (PCCs) Management has been studied by The Energy and Resource Institiute (TERI) and articulately represented in the report[10]

End of Life study by TERI:

The end of life scenario for beverage carton has changed drastically over the years and is comprehensively studied by TERI - "The Tetra Pak carton is primarily made up of Paper (75% by weight) and the rest is polyethylene-aluminium (25%). As part of environment initiatives, Tetra Pak has undertaken various activities for collection and recycling of these Post Consumer Tetra Pak Cartons (PCCs) and is working with various NGO's and the waste picker workforce to segregate PCCs. With the aim to ensure that the PCCs are retrieved and recycled responsibly and that no carton ends up at the landfill, Tetra Pak has taken up several studies in the past in this regard." (TERI Report, page 1[11]).

The scope of the TERI study included a questionnaire survey of the key stakeholders (rag pickers, small and large kabadiwalas (junk dealers), low grade paper waste dealers and waste paper based paper mills). The sample size was kept to be 30 comprising of at least 10 rag pickers, 7 small level kabadiwalas, 7 medium level kabadiwalas, 5 large scale low grade paper waste dealers and 1 waste paper based paper mill. The questionnaire was prepared by TERI and after an exhaustive inhouse deliberation and discussion with Tetra Pak, it was provided to the survey partners.

The TERI study also computes the recycling rates according to the assumption that informal sector (This includes rag pickers, small and large kabadiwalas low grade paper waste dealers and waste paper based paper mills) recovers 30% and 40% of the total waste paper generated in 11 major cities. An average of

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[7] LCI dataset for converting of beverage carton packaging material

[8] http://gabi-dataset-documentation.gabi-software.com/xml_data/processes/90a3b10d-83cc-4bc7-a715-991e2ea786ad_01.00.000.xml

[9] The weight and the surface area of the beverage carton was measured precisely to obtain the total weight per area ratio

[10] T E R I. 2011; Post Consumer Tetra Pak Cartons (PCCs) Management ; New Delhi: The Energy and Resources Institute. 79 pp. [Project Report No. 2011 EE 01]

[11] T E R I. 2011; Post Consumer Tetra Pak Cartons (PCCs) Management ; New Delhi: The Energy and Resources Institute. 79 pp. [Project Report No. 2011 EE 01] [page 1]

28.78% and 35.07% was calculated as the total recycling rate for the considered recovery rate. The rest of the waste paper is directed towards landfill in both the scenarios. This data has been modelled and the environmental impact results considering the recycling rate and reported in the TERI report.[12]

In this LCA study, of beverage carton for Tetra Pak, the conclusion has been drawn based on the following three studies:

1. LCA study of 180 ml beverage carton conducted for Tetra Pak by PE Sustainability Solutions Pvt Ltd
2. Waste management study carried out by TERI for Tetra Pak [TERI 2011; Post Consumer Tetra Pak Cartons (PCCs) Management, New Delhi: The Energy and Resources Institute. 79 pp., [Project Report No. 2011 EE 01]]
3. Publically available study carried out by All India Glass Manufacturing Association (AIGMF) for "Container Glass and Comparison with Alternate Packaging Mediums (PET, Beverage Carton, Aluminum Can and Pouch)"[13].

Summary of AIGMF Abridged Study

The following table shows the **functional unit** of different packaging solution which are considered in the AIGMF study:

Bottle Type	Glass Bottle	Beverage Carton
Packaging size (ml)	180	180
Packaging Use	Liquor	Liquor

The **assumptions** for the "Publically available AIGMF Study"[14] includes,

- site-specific (for 24 sites) data for glass container representative of current technology used in India (72% of production volume) of reference year 2010-11 were collected and analyzed for container glass
- no impact due to the filling process and the use phase of the container
- The container glass packaging solution undergoes multiple reuses. The recycling of post-consumer container glass back into container glass is based on primary data collected from container glass manufacturing companies. About 37.98% of the glass is send to landfill, followed by 32.02% recycling and about 30% of the glass is reused. ("Publically available AIGMF Study")
- The liquid packaging board's end of life stage is limited to landfill and open burning as mentioned in the "Recycling" table (page 9 of the "Publically available AIGMF Study"). About 80% of the waste is send to landfill and rest (20%) is incinerated via open burning.

Table 15 has been represented in "Publically available AIGMF Study" showing the environmental profile of 180 ml container glass.

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[12] T E R I. 2011 Post Consumer Tetra Pak Cartons (PCCs) Management; New Delhi: The Energy and Resources Institute. 79 pp. [Project Report No. 2011 EE 01] [table 27 and 28]
[13] http://www.aigmf.com/GlassLCA_AbridgedReport_AIGMF.pdf
[14] http://www.aigmf.com/GlassLCA_AbridgedReport_AIGMF.pdf

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Table 15: Environmental profile of 180 ml container glass [Source: page 11; Publically Available AIGMF Study[15]]

Impact Category	Cradle to cradle Glass 180 ml (1)
Acidification Potential (AP) [kg SO_2-Equiv.]	**1.20E-03**
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	**9.40E-05**
Global Warming Potential (GWP 100 years) [kg CO_2-Equiv.]	**1.60E-01**
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	**3.40E-02**
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	**4.70E-05**
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	**4.20E-04**
Primary energy demand from ren. and non ren. resources (net cal. value) [MJ]	**2.30E+00**

The environmental impact on a scale of 100 of glass (column 1) and beverage carton (column 2) as mentioned in Table 6, Column 1 and Column 7, Page 11 of "Publically available AIGMF Study"[16] are shown in Table 16 below.

Table 16: Comparison of 180 ml Glass with Beverage Carton

Impact Category	Glass Ref (1)	Beverage Carton Ref (2)
Acidification Potential (AP) [kg SO_2-Equiv.]	100	18
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	100	36
Global Warming Potential (GWP 100 years) [kg CO_2-Equiv.]	100	12
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	100	35
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	100	39
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	100	24
Primary energy demand from ren. and non ren. resources (net cal. value) [MJ]	100	44

Based on the relative information for glass and beverage carton and absolute values of LCIAs of glass, Table 17 represents the absolute values of LCIAs for beverage carton.

Table 17 Absolute LCIAs for Beverage Carton

Impact Category	Glass Ref (1)	Beverage Carton Ref (2)
Acidification Potential (AP) [kg SO_2-Equiv.]	1.20E-03	2.16E-04
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	9.40E-05	3.38E-05
Global Warming Potential (GWP 100 years) [kg CO_2-Equiv.]	1.60E-01	1.92E-02
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	3.40E-02	1.19E-02

[15] http://www.aigmf.com/GlassLCA_AbridgedReport_AIGMF.pdf [page 11; table 6]
[16] http://www.aigmf.com/GlassLCA_AbridgedReport_AIGMF.pdf [page 11; table 6]

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Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	4.70E-05	1.83E-05
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	4.20E-04	1.01E-04
Primary energy demand from ren. and non ren. resources (net cal. value) [MJ]	2.30E+00	1.01E+00

6.1 Comparative Discussion

This section compares the result generated in all three studies for comparative functional unit – container with 180 ml capacity to hold fluid.

Column (1) of Table 18 represents the environmental profile of container glass as per "Publically Available AIGMF study". Based on the absolute results of container glass in Table 15, the absolute value of beverage carton as per AIGMF study is shown in column (2) of Table 18. Column (3) represents the results of beverage carton study conducted by Tetra Pak considering end of life of beverage carton as 80% landfill and 20% going for open burning. Column (4) and (5) represents the results of beverage carton considering *scenario 1* [71% to landfill and 29% recycling] and *scenario 2* [65% to landfill and 35%] of TERI End of Life study respectively.

Table 18: Environmental profile of glass container and beverage carton based on AIGMF and Tetra Pak Study

	AIGMF		**Tetra Pak + TERI**		
Impact Category	Cradle to cradle Glass 180 ml (1)	Absolute Result for Beverage Carton (2)	Cradle to cradle beverage carton - Tetra Pak Study (3)	Scenario 1 - 30% Recovery (4)	Scenario 2 - 40% Recovery (5)
Acidification Potential (AP) [kg SO_2-Equiv.]	1.20E-03	2.16E-04	1.78E-04	1.44E-04	1.43E-04
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	9.40E-05	3.38E-05	2.12E-05	1.66E-05	1.63E-05
Global Warming Potential (GWP 100 years) [kg CO_2-Equiv.]	1.60E-01	1.92E-02	1.20E-02	8.99E-03	8.07E-03
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	3.40E-02	1.19E-02	1.16E-02	7.98E-03	7.97E-03
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	4.70E-05	1.83E-05	1.41E-05	1.20E-05	1.16E-05
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	4.20E-04	1.01E-04	5.56E-05	4.09E-05	3.97E-05
Primary energy demand from ren. and non ren. resources (net cal. value) [MJ]	2.30E+00	1.01E+00	7.39E-01	7.11E-01	7.04E-01

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Table 19 represents the environmental profile of container glass and beverage carton on a scale of 100, based on AIGMF, Tetra Pak and TERI studies.

Table 19: Percentage comparative environmental profile for glass container and beverage carton based on AIGMF, Tetra Pak and TERI Study

	AIGMF		Tetra Pak + TERI		
Impact Category	Cradle to cradle Glass 180 ml	Absolute Result for Beverage Carton	Cradle to cradle beverage carton - Tetra Pak Study	Scenario 1 - 30% Recovery	Scenario 2 - 40% Recovery
Acidification Potential (AP) [kg SO_2-Equiv.]	100%	18.0%	14.8%	12.0%	11.9%
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	100%	36.0%	22.6%	17.7%	17.3%
Global Warming Potential (GWP 100 years) [kg CO_2-Equiv.]	100%	12.0%	7.5%	5.6%	5.0%
Human Toxicity Potential (HTP inf.) [kg DCB-Equiv.]	100%	35.0%	34.1%	23.5%	23.4%
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	100%	39.0%	30.0%	25.5%	24.7%
Terrestric Ecotoxicity Potential (TETP inf.) [kg DCB-Equiv.]	100%	24.0%	13.2%	9.7%	9.5%
Primary energy demand from ren. and non ren. resources (net cal. value) [MJ]	100%	44.0%	32.1%	30.9%	30.6%

Table 19 shows that beverage carton when compared to container glass, gives a lower environmental impact. Scenario with more recycling rates of 29% and 35% shows even lower environmental impacts.

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Annex A LCI DATASET FOR BEVERAGE CARTON

Inputs:		
	Quantity:	Unit:
Grid electricity	360	MJ
Natural Gas*	114.6	MJ
Fuel oil light*	0.367	MJ
LPG*	22.7	MJ
Water	0.105	m^3
Printing ink	1.7	kg
Polyethylene	Specified by user	
Aluminium foil	Specified by user	
Liquid Packaging Board	Specified by user	
Secondary Packaging Materials:		
corrugated cardboard	10	kg
LDPE shrink foil	0.6	kg
Outputs:		
	Quantity:	Unit:
Product:		
Converted board (BC)	1000	m^2
Waste:		
special waste	3.08E-01	kg
Emissions to air from process:		
VOC	5.,93E-02	kg
Emissions to air from on-site fuel use:		
CO_2, fossil	7.60E+00	kg
N_2O	1.39E-04	kg
CO	2.89E-03	kg
CH_4	6.94E-04	kg
NMVOC	6.94E-04	kg
NOx	7.70E-03	kg
SO_2	8.71E-05	kg
dust	1.96E-05	kg
Product waste:		
Product waste	7.1	%**

* lower heating value used for calculation
**: % of input materials, thereof >96% are sent to recycling (~3% landfill/ ~1% incineration)

Annex B DESCRIPTION OF SELECTED INVENTORIES AND IMPACT CATEGORIES

Acidification Potential

The acidification of soils and waters occurs predominantly through the transformation of air pollutants into acids. This leads to a decrease in the pH-value of rainwater and fog from 5.6 to 4 and below. Sulphur dioxide and nitrogen oxide and their respective acids (H_2SO_4 und HNO_3) produce relevant contributions. This damages ecosystems, whereby forest dieback is the most well-known impact.

Acidification has direct and indirect damaging effects (such as nutrients being washed out of soils or an increased solubility of metals into soils). But even buildings and building materials can be damaged. Examples include metals and natural stones which are corroded or disintegrated at an increased rate.

When analysing acidification, it should be considered that although it is a global problem, the regional effects of acidification can vary.

The acidification potential is given in sulphur dioxide equivalents (SO_2-Eq.). The acidification potential is described as the ability of certain substances to build and release H+ - ions. Certain emissions can also be considered to have an acidification potential, if the given S-, N- and halogen atoms are set in proportion to the molecular mass of the emission. The reference substance is sulphur dioxide.

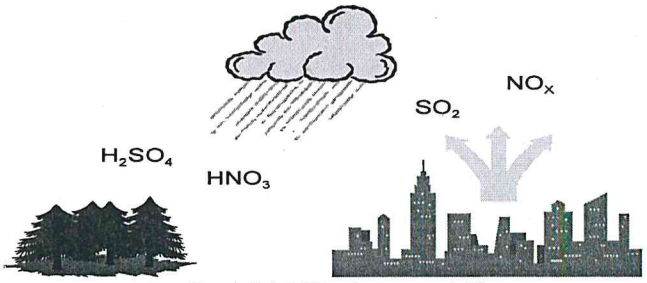


Figure 7 Acidification potential[17]

Global Warming Potential

The mechanism of the greenhouse effect can be observed on a small scale, as the name suggests, in a greenhouse. These effects are also occurring on a global scale. The occurring short-wave radiation from the sun comes into contact with the earth's surface and is partly absorbed (leading to direct warming) and partly reflected as infrared radiation. The reflected part is absorbed by so-called greenhouse gases in the troposphere and is re-radiated in all directions, including back to earth. This results in a warming effect at the earth's surface.

In addition to the natural mechanism, the greenhouse effect is enhanced by human activities. Greenhouse gases that are considered to be caused, or increased, anthropogenically are, for example, carbon dioxide, methane and CFCs. An analysis of the greenhouse effect should consider the possible long term global effects.

[17] Kreißig, J.; Kümmel, J (1999): Baustoff-Ökobilanzen. Wirkungsabschätzung und Auswertung in der Steine-Erden-Industrie. Hrsg. Bundesverband Baustoffe Steine + Erden e.V

The global warming potential is calculated in carbon dioxide equivalents (CO_2-Eq.). This means that the greenhouse potential of an emission is given in relation to CO_2. Since the residence time of the gases in the atmosphere is incorporated into the calculation, a time range for the assessment must also be specified. A period of 100 years is customary.

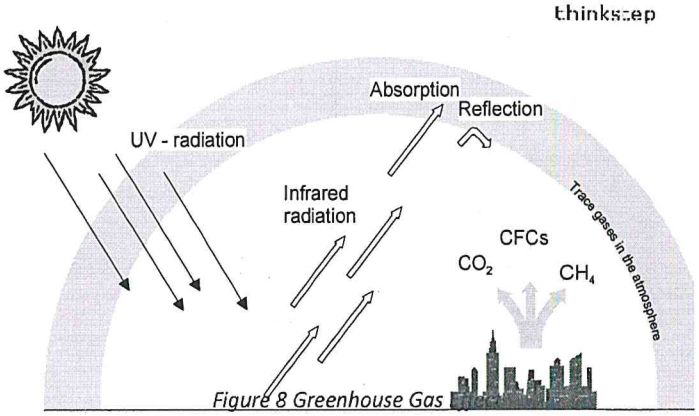


Figure 8 Greenhouse Gas

Primary energy demand

Primary energy demand is often difficult to determine due to the various types of energy source. Primary energy demand is the quantity of energy directly withdrawn from the hydrosphere, atmosphere or geosphere or energy source without any anthropogenic change. For fossil fuels and uranium, this would be the amount of resource withdrawn expressed in its energy equivalent (i.e. the energy content of the raw material). For renewable resources, the energy-characterised amount of biomass consumed would be described. For hydropower, it would be based on the amount of energy that is gained from the change in the potential energy of the water (i.e. from the height difference). As aggregated values, the following primary energies are designated:

The total **"Primary energy from non renewable resources"**, given in MJ, essentially characterises the gain from the energy sources natural gas, crude oil, lignite, coal and uranium. Natural gas and crude oil will be used both for energy production and as material constituents e.g. in plastics. Coal will primarily be used for energy production. Uranium will only be used for electricity production in nuclear power stations.

The total **"Primary energy from renewable resources"**, given in MJ, is generally accounted separately and comprises hydropower, wind power, solar energy and biomass.

It is important that the end energy (e.g. 1 kWh of electricity) and the primary energy used are not miscalculated with each other; otherwise the efficiency for production or supply of the end energy will not be accounted for.

The energy content of the manufactured products will be considered as feedstock energy content. It will be characterized by the net calorific value of the product. It represents the still usable energy content.

Aquatic Eutrophication

Aquatic Eutrophication occurs when excessive amounts of nutrients reach freshwater systems or oceans. Algae bloom may result and fish may disappear. Whereas phosphorous is mainly responsible for eutrophication in freshwater systems, nitrogen is mainly responsible for eutrophication in ocean water bodies.

The Aquatic Eutrophication indicator based on the potential impact relative to the reference substance phosphorous, i.e. [kg P eq / FU] is recommended for freshwater eutrophication and mass of nitrogen equivalents [kg N eq) / FU] is recommended for marine eutrophication.

Photochemical Ozone Creation Potential (POCP)

Definition

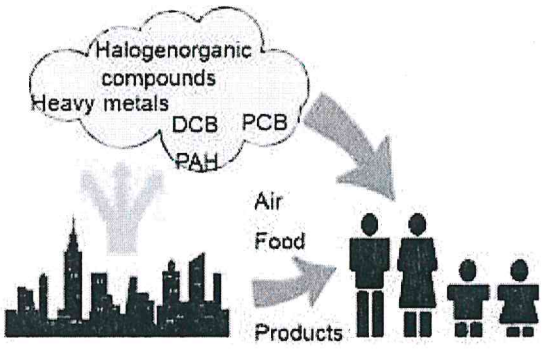
Photochemical Ozone Creation Potential (POCP) is the potential of ozone creation at ground level (i.e. tropospheric ozone) through photochemical transformation of ozone precursor emissions. The main ozone precursor compounds are nitrogen oxides (NOx) and non-methane volatile organic compounds

(NMVOC). Mass of non-methane volatile organic compound equivalents, e.g. [kg NMVOC eq / FU] calculated using the "photochemical oxidant formation potential" indicator at a midpoint level, as described in the ReCiPe impact assessment methodology.

Freshwater Consumption

Methodologies for the measurement and assessment of life cycle impacts related to water resources are currently under development within the scientific community as well as in international initiatives, such as the UNEP/SETAC Life Cycle Initiative (http://lcinitiative.unep.fr), and standardization bodies such as ISO which is currently working on the international standard ISO/WD 14046 Water footprint—Requirements and guidelines. Due to the ongoing development, it is premature to recommend life cycle impact assessment methods for freshwater use. We therefore recommend to measure net water consumption (also called "consumptive use") on an inventory level. Aggregating different measures of water, such as in-stream water use (e.g. turbined river water for hydro power generation), off-stream use (e.g. cooling water that is returned to the same watershed) or degradative use (e.g. water pollution) at an inventory level would not generate useful decision support and they are therefore excluded from this indicator awaiting the acceptance of a relevant impact assessment method.

Human Toxicity Potential (HTP): The human toxicity potential (HTP), a calculated index that reflects the potential harm of a unit of chemical released into the environment, is based on both the inherent toxicity of a compound and its potential dose. It is used to weight emissions inventoried as part of a life-cycle assessment (LCA) or in the toxics release inventory (TRI) and to aggregate emissions in terms of a reference compound. Total emissions can be evaluated in terms of benzene equivalence (carcinogens) and toluene equivalents (noncarcinogens).



ANNEXURE R12/10.

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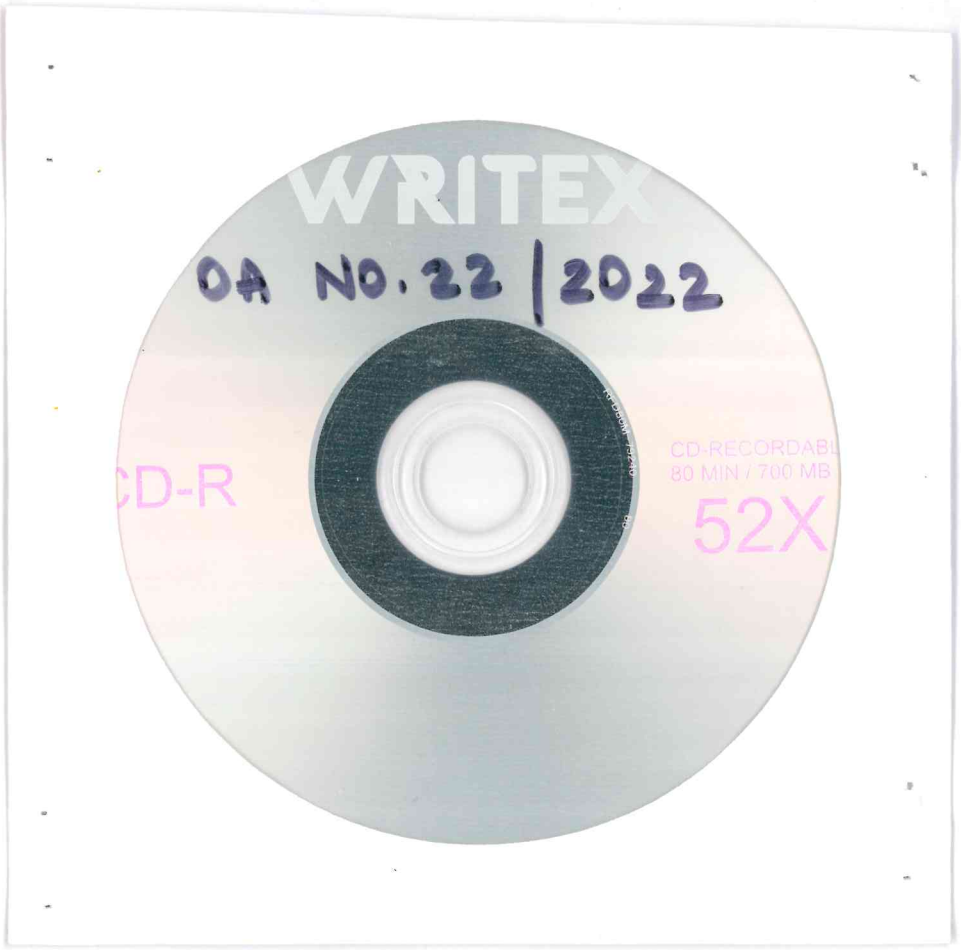
CD comprising of the downloaded versions of the YouTube videos.



ANNEXURE R12/11
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2018CW29
India

USED BEVERAGE CARTON (UBC) MANAGEMENT STUDY FOR INDIA

Prepared for
Tetra Pak India Pvt Ltd

teri
The Energy and Resources Institute
...towards global sustainable development

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Abbreviations	
BMC	Bhubaneswar Municipal Corporation
CPPRI	Central Pulp & Paper research Institute
EPR	Extended Producer Responsibility
GMC	Guwahati Municipal Corporation
HDPE	High Density Poly-ethylene
JMC	Jammu Municipal Corporation
KMC	Kolkata Municipal Corporation
KMC*	Kurnool Municipal Corporation
MSW	Municipal Solid Waste
NNN	Nagpur Nagar Nigam
OCC	Old Corrugated Containers
RCF	Recycled Cellulose Fiber
SMC	Srinagar Municipal Corporation
SDG	Sustainable Development Goals
TERI	The Energy and Resources Institute
TPIPL	Tetra Pak India Pvt. Ltd
UBC	Used Beverage Carton
WP	Waste Paper

Preface

In India, Tetra Pak was among the first carton packaging companies started in the year 1987. The main focus of Tetra Pak is to provide safe food which is accessible and sustainable in nature to benefit lives of many. Tetra Pak is actively involved and has taken up various initiatives to ensure protection of food as well as future of the people (aligning its activities towards SDGs). With the sole purpose to understand the management of used beverage carton, Tetra Pak appointed The Energy and Resources Institute (TERI) to undertake this study. We laud the efforts of corporates like Tetra Pak who come forward voluntarily to commission such comprehensive studies.

Tetra Pak is consistently being proactive for safeguarding environment and has been involved in many cities to set up collection centres for Used Beverage Cartons (UBCs) as well as raising awareness among public through information, education and capacity building programs. This is a third report in the series by Tetra Pak to help understand management of UBCs and evaluate recycling rates in Indian subcontinent, after years 2011 and 2015. Every report has extended its horizon as well as number of stakeholders for interaction to assess collection and recycling of UBCs. Tetra Pak has been doing voluntary EPR for more than 15 years now and has been continuously working with recyclers across South Asian region to develop solutions, technologies and applications. Through constant interactions and tie ups with recyclers to develop solutions, technologies and applications of UBCs, Tetra Pak has always tried to bring up the level of active sorting of UBCs and reduce mixed waste recycling. Thus, making recycling of UBCs more effective, efficient and economical.

The span of this study was spread in 20 selected cities of India and 03 cities of Kathmandu, Sri Lanka and Bangladesh. This particular report specifically talks about 20 Indian cities. Compared to the earlier study conducted by TERI on UBC management (also called Post-consumer carton management) for Tetra Pak it was observed that recycling rate was about 29-35% in 2011, about 48 to 51% in 2015 and is now increased to about 54% in 2019.

We hope this type of study will definitely help Tetra Pak to formulate appropriate strategies to enhance the recycling rates of UBCs and help achieve SDGs. This report will also be helpful to policy makers, urban local bodies, think tanks, NGOs and waste processors to understand the scenario of UBCs management and it's potential.

Dr Ajay Mathur

Executive Summary

Beverage cartons allow distribution of liquid & food products at ambient temperature or under refrigerated conditions by extending shelf life of foods and beverages. A beverage carton is majorly made up of 75% paperboard, 4% aluminium and 21% polymers, thus categorizing these cartons as paper-based packaging. Paperboard used in beverage carton is a valuable raw material that can be easily recycled for making new paper-based products. Aluminium present in the carton is very thin and similar to human hair. It helps in creating a barrier for oxygen, flavours and light. Polymer acts as an inner layer which seals the liquid and acts as an adhesive to aluminium, fibre and external layer as well to keep out the moisture. These paper-based cartons are fully recyclable.

In India, Tetra Pak was among the first carton packaging companies started in the year 1987. It created a lot of job opportunities. The company brought in newer technologies that were customized for Indian markets. The main focus of Tetra Pak is to provide safe food which is accessible and sustainable in nature to benefit lives of many. Tetra Pak India is way ahead of many countries and is one of the fastest growing markets globally.

Tetra Pak offers a wide variety of openings and closures for the cartons, which are bio-based caps made up of HDPE (High Density Poly-ethylene) which is derived from sugarcane. Tetra Pak is one of the first among all other companies to use bio-based HDPE. This is helping improve the environmental performance of packaging, making recycling much more convenient and therefore is economically beneficial.

In India, Tetra Pak is leading and is the first manufacturing company for beverage cartons. Over the last 30 years many packaging formats have been introduced and advanced in different sizes and these packages are kept at different prices so they could suit different consumer requirements.

Tetra Pak is actively involved to ensure that its cartons don't end up in landfill from last 15 years and has taken up various initiatives to make sure the cartons are collected, sorted and recycled and ensure protection of food as well as future of the people (aligning its activities with the SDGs). With the sole purpose to understand the management of used beverage carton, Tetra Pak appointed TERI to undertake this study and help them formulate appropriate strategies to enhance the recycling rates of UBCs.

The paper-based beverage cartons manufactured by Tetra Pak are fully recyclable and out of the overarching 161,000 Tonnes per day of Municipal Solid Waste our urban cities generate, they form only a miniscule part. Tetra Pak is consistently being proactive for safeguarding environment and has been involved in many cities to set up collection centres for Used Beverage Cartons (UBCs) as well as raising awareness among public through various information, education and capacity building programs. This is a third report of its kind within this decade by Tetra Pak to help evaluate recycling rates of UBCs, after year 2011 and year 2015. Every report has extended its horizon as well as number of stakeholders for interaction.

Tetra Pak has been fulfilling extended producer responsibility (EPR) voluntarily for more than past 15 years now and has been continuously working with recyclers across South Asian region to develop solutions, technologies and applications for UBCs. Through

constant interactions and tie ups with recyclers to develop solutions, technologies and applications of UBCs, Tetra Pak has always tried to bring up the level of active sorting of UBCs and reduce mixed waste recycling. Thus, making recycling of UBCs more effective, efficient and economical.

This study was undertaken with the overarching objective to explore the perceptions of waste generators and waste collectors on UBC management, and evaluating the quantity of UBCs collected for recycling with mixed waste paper through scrap dealers,. The span of this study is spread across 20 cities of India and 03 cities of Kathmandu, Sri Lankaand Bangladesh. This particular report specifically talks about 20 Indian cities.

Sub Objectives of this study:

- Study the current quantum of UBC getting procured/ retrieved at the waste dealers' level for further recycling with mixed waste paper.
- Understand the value chain and economics involved in UBC collection and recycling.
- Assess the actual quantum of UBC reaching the paper mills which recycle paper from low grade paper waste.
- Understanding the composition of paper waste and quantity of UBC reaching dumpsites in the surveyed cities.
- Gauge, what critical stakeholders (low grade paper waste dealers and recycling paper mills) believe, is needed to upscale collection and recycling.

Methodology consists of selecting cities with highest beverage carton sales and spread across South, North, East and West regions of the country and conducting primary field surveys with various stakeholders as Waste generators (10/city), Waste collectors (20/city), Small scale scrap dealers (14/city), Large scale waste dealers(07/city), Dumpsite (03/city), Paper Mill (1/region). Local survey agencies were identified in each of the project city to carry out on ground data collection and survey. Reputed NGOs/ agencies active in the field of solid waste management were selected for the study with help from Tetra Pak India Pvt Ltd (TPIPL)

For the selected study area i.e. the selected city, detailed secondary data collection in relevance to waste management and waste characterization was carried out. Under the guidance and monitoring of TERI research staff, primary survey was conducted through questionnaire seeking information from all the major stakeholders involved in the management of the UBC including the consumers (from different socio-economic backgrounds), waste collectors, different levels of waste / scrap dealers (small and large scale waste paper dealers) spread across the city. This study also included surveys at recyclers / paper mills using mixed waste paper as raw material to understand the fate of UBCs getting mixed with it. Survey also involved evaluation of UBC reaching the disposal site (Landfill) in the selected city.

The key findings of the study are as follows:

The study revealed that UBCs are being collected by rag pickers, small scale waste paper dealers, and large scale dealers and are then sent to recycling units. The outcomes of the study revealed the percentage of dealers dealing with UBCs and are depicted in figure below.

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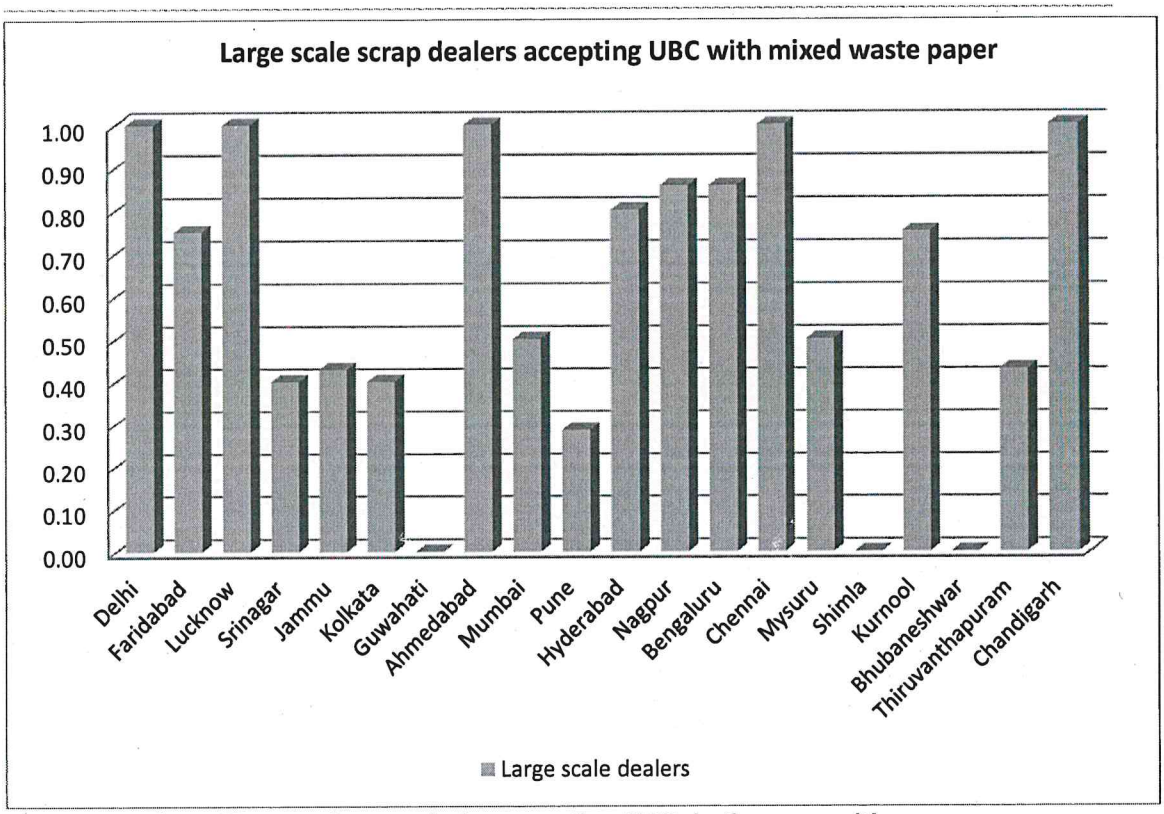

Figure 1 Fraction of Large scale scrap dealers accepting UBCs in the survey cities

It was found that in cities like Ahmedabad, Chandigarh, Chennai, Delhi and Lucknow 100% of dealers were accepting UBCs.

Figure2 depicts average UBCs found with mixed waste paper bales at respective cities.

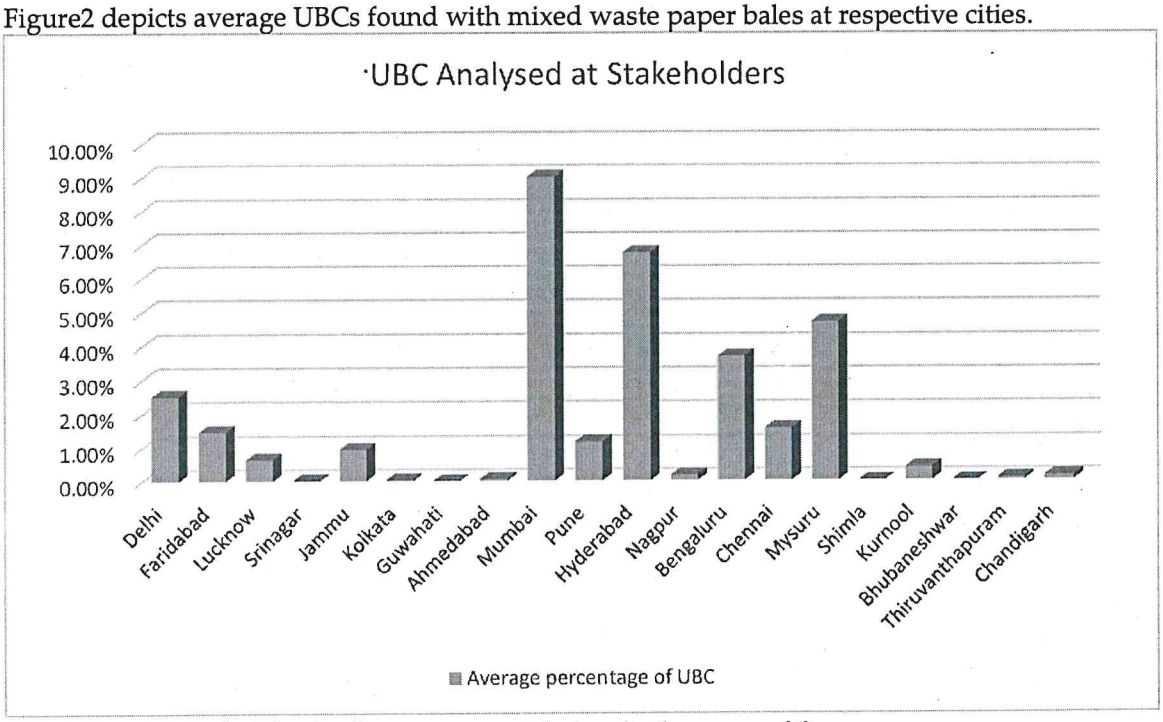

Figure 2 UBC found with mixed waste paper at dealers in the survey cities

The figure 3 depicts recycling rate with limitation of 100% recycling revealed after surveying various cities.

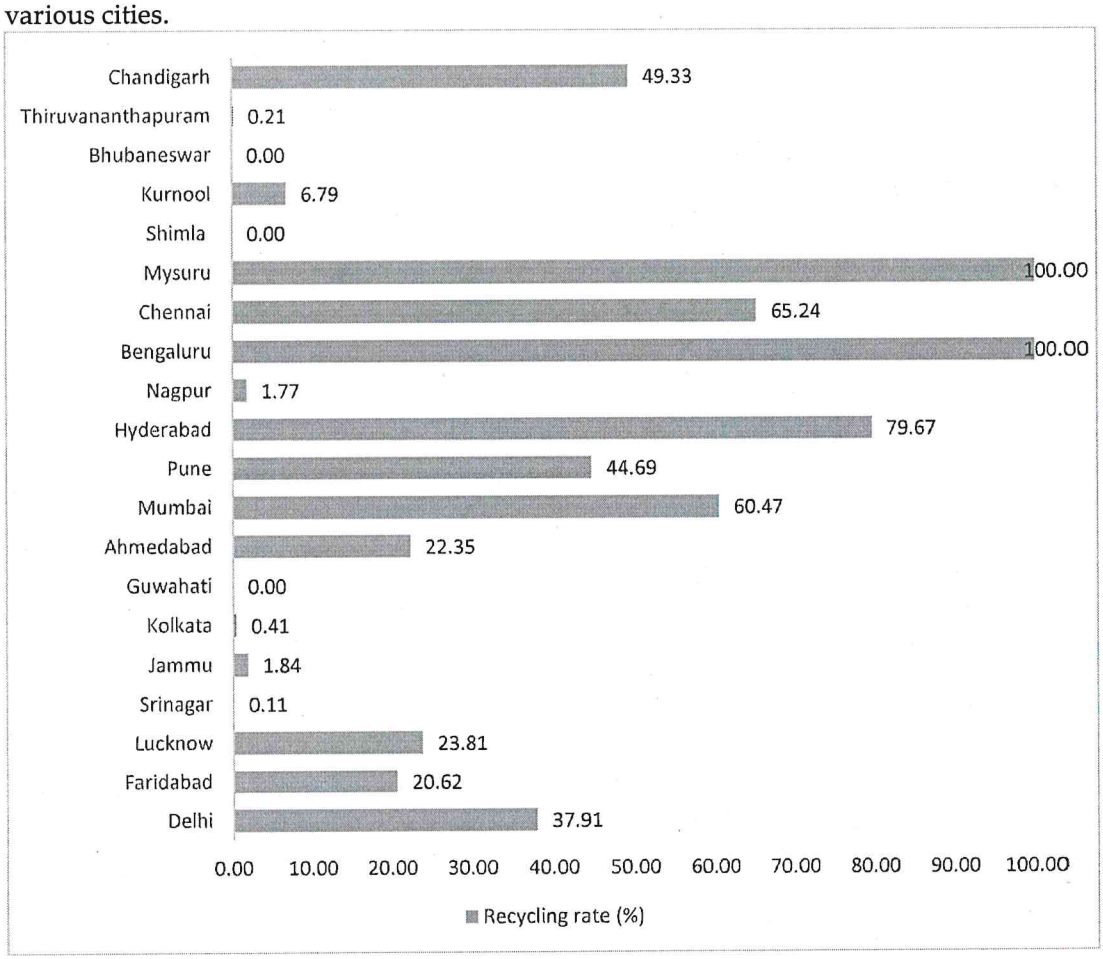

Figure 3 Recycling rates of UBCs in the survey cities by informal sector

The study also showed that 60% of the paper mills surveyed were involved in collecting UBCs from dealers but none of them dealt with UBCs separately. Compared to the earlier study conducted by TERI on Post-consumer carton (also called UBCs now) management for Tetra Pak it was observed that

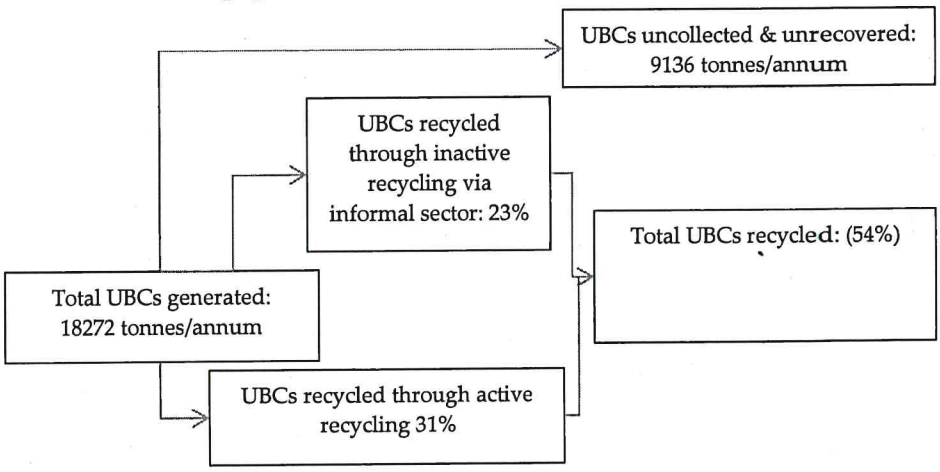

Figure 4: UBC management in India

recycling rate was about 29-35% in 2011, about 48 to 51% in 2015 and is now increased to **about 54% in 2019.**

It was thus clear that recycling rates have increased due to interventions of Tetra Pak, by virtue of working with numerous recyclers and associations to develop solutions, technologies and applications of UBCs. Due to these interventions, the quantity of UBCs going along with mixed paper has reduced and separate collection and recycling of UBCs have been achieved especially in cities like Delhi, Ahmedabad, Mumbai, Pune, Hyderabad, Bengaluru, Chennai, Chandigarh, Mysuru, and Faridabad.

Few of the key recommendations of the study which can be beneficial and help in further improving the recycling rate of UBCs are as follows:

1. As compared to the 2015 study, UBCs collected by informal sector in cities of Ahmedabad, Hyderabad and Bengaluru has reduced and viz a viz UBCs entering into formal active recycling has increased. This indicates the impact of interventions by Tetra Pak to make UBCs sustainable. There is a further need to get the UBCs into active recycling chain as this will not only increase the market potential but will also reduce the number of stakeholders involved in recycling chain. This will increase the price value for those on the front end of the recycling value chain i.e. waste collectors.
2. In cities of Jammu, Kolkata and Guwahati; an urgent attention is required, as due to the lack of acceptance of UBCs by paper mills, the amount of UBCs collected by informal sector has substantially reduced. Active UBC collection and tie ups with recycling units can help push UBCs collection and recycling in these cities again.
3. Pertaining to other surveyed cities, acceptability of UBCs via paper mills is the first key imperative that can help improve the UBCs acceptability among waste dealers. This will require information, education and capacity building activities with paper mills along with a strong business case depicting profitability scenarios through fibrous contents of paper based UBCs.
4. A separate collection centre for UBCs should be made which should be linked with material recovery facilities (existing/coming up under the Solid Waste management rules 2016) to facilitate active recycling of UBCs
5. More awareness among waste generators, waste collectors, small and large scale waste dealers can help in segregation of UBCs at source along with straws, however this should be a concerted effort by each stakeholder in the value chain i.e. government, NGOs, industry, etc
6. Higher prices of UBCs can effectively drive the informal recycling and increase recycling rates. Higher prices can be achieved in two ways a) by reducing the chain for collection and recycling and b) Upcycling UBCs through different products and interventions like sheets being used for making mobile toilets/ material recovery facilities etc.
7. The management of UBCs should be further studied and successful lessons should be replicated at other places
8. Such an exercise (to study the management of UBCs in major cities and identify the recycling rates) may be repeated in every 03 years to reassess the improvement in recycling rates and plan interventions and strategies.

5 UBC Management Chain

Figure below shows the schematic representation of the informal recycling system in India.

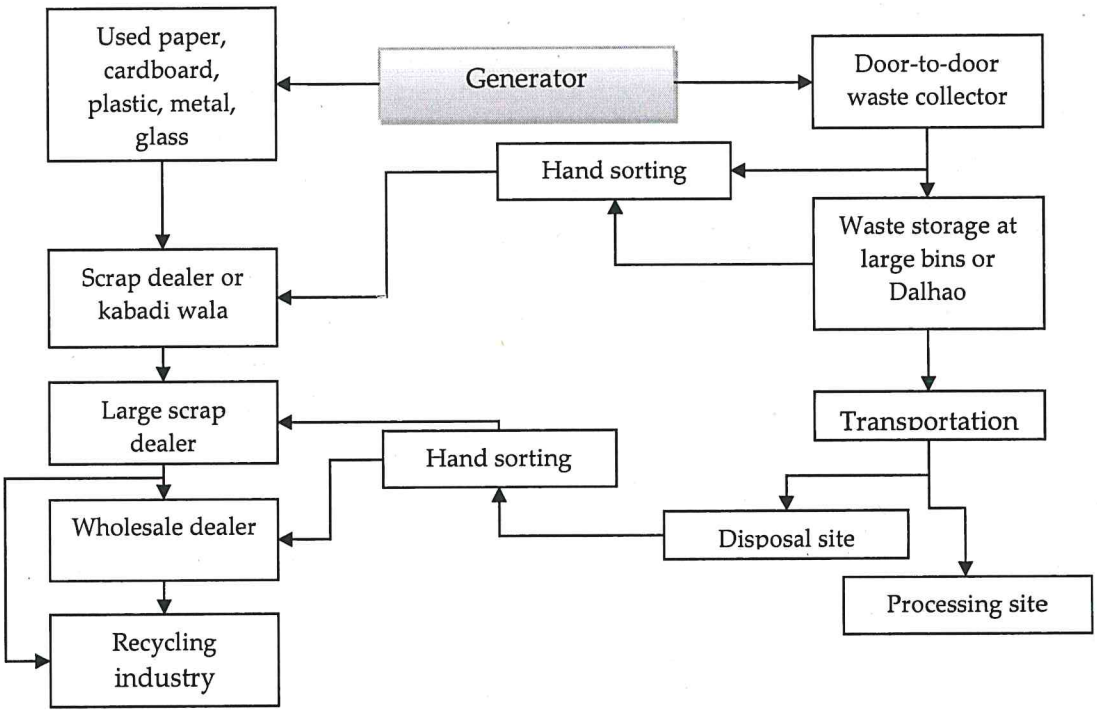

Figure 64: Schematic representation of the informal recycling system in India

The fate of UBCs varies from city to city since there are different collection and recycling systems. While some cities do not collect UBCs at all, some have very high collection and recycling rates. Awareness level and availability of markets via recycling units, decides the fate of UBCs. For cities that recycle UBCs have the following stakeholder involvement:

- *Street waste picking*: UBCs are recovered from mixed waste found on streets or extracted from community bins before collection by scavengers (ragpickers). This practice probably occurs in most of the cities where UBCs are acceptable for waste dealers.
- *Municipal waste collection crew/door to door collection crew*: UBCs are recovered along with other waste from vehicles transporting waste to Dhalao/community bin sites. This practice is widespread in almost all cities where door-to-door collection is practised.
- *Hotels and institutions*: Waste collected from airports, canteens, and hotels are sorted for UBCs and further sold to large dealers for recycling.
- *Waste picking from dumps*: Waste pickers/scavengers sort through waste before it is sent to the site for final disposal. Sorting is often carried out by communities that live on or near the dump.

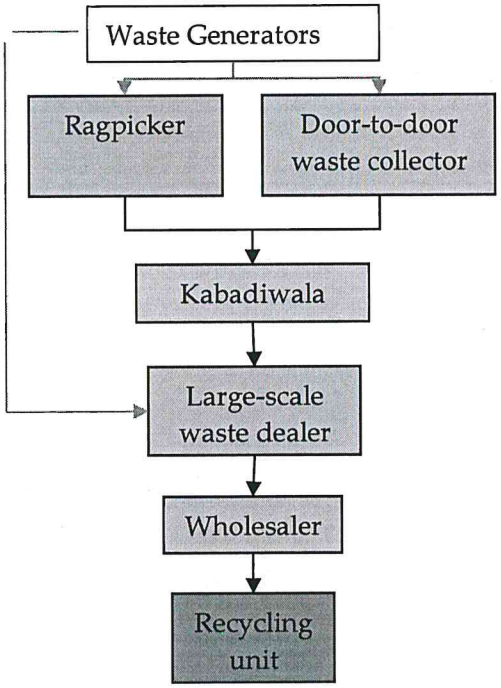

Figure 65: The recycling chain

At the top of the chain are waste generators who generate UBCs and even sell these directly to bulk waste managers/large scale dealers, second in the row are waste collectors, that is, ragpickers and door-to-door collectors. Waste pickers collect waste from streets, waste bins, Dalhao, households (generators) and dumpsites and sell these to kabadiwalas or small-scale waste dealers, who in turn give immediate monetary return for the recyclables. Similarly, door-to-door collectors segregate recyclables at the very first stage. The collected waste is sorted and sold to small-scale waste dealers or kabadiwalas.

Kabadiwalas store the small quantities of waste contributed to them by door-to-door collectors, ragpickers, and directly from waste generators at their level. After collecting an economically viable quantity of recyclable wastes, they sell these to large-scale dealers nearby. The dealers provide immediate monetary value for the waste and sometimes even pay in advance to retain their suppliers.

Dealers further categorize waste as per the grade of paper/waste for fetching maximum monetary value. They either directly sell it to the paper mills or sell it to the wholesalers depending on the terms of payment and price offered.

Recycling units purchase segregated waste to prepare various products such as Kraft, floating media paper, moulded pulp tray etc. Through consistent interventions over the past 15 years, Tetra Pak has successfully managed to reinforce paper based cartons including straws, a lucrative raw material for paper mills and recyclers. Tetra Pak has roped in multiple agencies that are engaged in collecting segregated UBCs from ragpickers and kabadiwalas in various cities across different regions of the country. Once they collect sufficient quantities, these agencies supply UBCs to paper mills these agencies are contributing in active recycling of UBCs and have also been reported in analysis of recycling

rates of UBCs. This helps in reducing the carbon footprints as well as create jobs in our country.

5.1 Survey analysis

Till date, about 550 mills in India use waste paper as primary fibre source for paper, paperboard and newsprint production. This waste paper is sourced indigenously as well as through imports. The present recovery and utilisation of waste paper by paper mills in India is 3.0 million tonnes annually, which translates to a **recovery of 27% of the total paper** and paperboard consumed. This recovery rate is very low when compared to developed countries like Germany-73%, Sweden-69%, Japan-60%, Western Europe-56%, USA-49% and Italy-45%. According to some estimates, one tonne of recycled paper saves approximately 17 trees, 2.5 barrels of oil, 4100 Kilowatt hours of electricity, 4 cubic meters of landfill and 31,780 litres of water. In other words, it has been estimated that recycling one tonne of waste paper results in saving of 70% raw material, 60% coal, 43% energy and 70 % water, as compared to making virgin paper from wood[1]

Recycled cellulose fiber (RCF)/ waste paper(WP) is best suited as a raw material for following end products – - Newsprint - Duplex board - Kraft paper. Processing of waste paper to obtain a clean stock for paper making involves a number of cleaning stages to remove contaminants present in the waste paper, such as iron clips, latex, wax, inks, etc., and one of the major technological issue is the presence of high level of contaminants in imported waste paper, which requires appropriate process configuration with state-of-the-art technologies to produce a clean stock. Majority of the mills are lacking state-of-the-art processing technologies.

The requirement of Recycled fibre/Waste Paper as a raw material is sourced indigenously as well as through imports. The availability of indigenous waste paper is inadequate, as a result mills rely heavily on waste paper imports to meet the demand of raw material. Presently around 3.0 million tons of waste paper is sourced indigenously and 4.0 million tonnes is being imported. The share of imported waste paper is 57% of total RCF requirement.[2]

The average growth rate for this segment is estimated to be 7.8%, with relatively higher growth rate for packaging products i.e. duplex board and kraft paper. Paper board and newsprint production from RCF/WP is estimated to be 11.7 million tons by the year 2025.

The production of paper, paper board and newsprint from RCF/WP based industry by 2025 would be around 11.7 million tons and to achieve this the additional raw material requirement of RCF/ WP would be around 9.3 million tons. In a scenario where waste paper recovery remains static at **the current level of 27%,** the share of imported waste paper will be 52% and would require substantial foreign exchange component in manufacturing cost. In case the waste paper recovery levels are increased to 50%, through the adoption of a well-

[1] https://dipp.gov.in/sites/default/files/DiscussionPaper_Recycling_WastePaper_21October2011%20%208.pdf
[2] http://ipma.co.in/wp-content/uploads/2018/04/wg_paper.pdf

designed mechanism, the share of indigenous waste paper will be about 90% and will result in substantial cost advantage to the RCF based mills

Of the total 653 paper mills in operation more than two thirds of the mills use RCF/waste paper as the primary fiber source, contributing about 4.72 million tons per annum or 47% of the country's total production of paper/paper board and newsprint. (Nearly 1.33 tons of recycled/waste paper is required to produce one ton of paper.)

Table below highlights the city level waste generation, collection and paper fraction data collected from secondary sources.

Table 46: City level data on waste generation, collection and paper fraction

S.No	City Name	Total waste generation (TPD)	% paper of total waste generated	MSW collection rate by ULB
1.	Delhi	9620[3]	5.6[4]	86.27[4]
2.	Faridabad	450[5]	5.6[5]	83
3.	Lucknow	1500[6]	15[7]	62.5[8]
4.	Srinagar	649[9]	15.2	91[10]
5.	Jammu	350 [12]	10.38[11]	98.5[12]
6.	Kolkata	4837[13]	6.07[14]	90[15]
7.	Guwahati	550[16]	15.35[17]	88[17]
8.	Ahmedabad	3700[18]	4.0[19]	100[4]

[3] CPCB, (2016).Consolidated annual review report on implementation of Solid waste management rules 2016: 2015-16

[4] Kumar,A,. (2016). Existing situation of MSW in NCT of Delhi, India. International Journal of social sciences. (Vol 1, (1), pp 6-17. http://ijss.publicationsupport.com/docs/paper/Volume-1/issue_1/IJSS-104.pdf

[5] http://www.hpccc.gov.in/PDF/Solid_Waste/Current%20Status%20of%20MSW.pdf

[6] https://www.researchgate.net/publication/314892686_Assessment_of_the_status_of_municipal_solid_waste_management_MSWM_in_Lucknow_-_Capital_city_of_Uttar_Pradesh_India

[7] https://www.ijser.org/researchpaper/Solid-Waste-Management-and-Characteristics-in-Lucknow-Uttar-Pradesh-India.pdf

[8] http://www.iosrjournals.org/iosr-jestft/papers/vol8-issue5/Version-2/G08524149.pdf

[9] https://www.researchgate.net/publication/322405270_Municipal_Solid_Waste_Generation_and_its_Management_a_Growing_Threat_to_Fragile_Ecosystem_in_Kashmir_Himalaya

[10] CPCB (2018), Consolidated annual review report on implementation of Solid waste management rules 2016: 2017-18

[11] http://www.ipublishing.co.in/ijesarticles/fourteen/articles/volsix/EIJES6023.pdf

[12] https://www.researchgate.net/publication/315713828_SOLID_WASTE_MANAGEMENT_IN_JAMMU

[13] http://www.indiaenvironmentportal.org.in/files/file/Solid%20Waste%20Generation%20Kolkata.pdf

[14] http://www.ipublishing.co.in/ijesarticles/fourteen/articles/volsix/EIJES6112.pdf

[15] CPCB (2017), Consolidated annual review report on implementation of Solid waste management rules 2016: 2016-17

[16] https://assam.gov.in/en/main/Waste%20Management

[17] https://link.springer.com/chapter/10.1007%2F978-981-10-7290-1_32

[18] http://www.uncrd.or.jp/content/documents/25756-3R_City-Report_Ahmedabad_ref.doc1_MSWM-Master-Plan2031.pdf

[19] https://www.ijedr.org/papers/IJEDR1704015.pdf and https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&cad=rja&uact=8&ved=2ahUKEwjXraHdtbjiAhVaT30KHXIfDPsQFjAIegQIAxAC&url=http%3A%2F%2Fcarbonn.org%2Fuploads%2Ftx_carbonndata%2FFile5_Ahmedabad_SWM.pdf&usg=AOvVaw2KadERgEyoT1V596Ms_vGn

S.No	City Name	Total waste generation (TPD)	% paper of total waste generated	MSW collection rate by ULB
9.	Mumbai	8250[20]	7.52[21]	100[21]
10.	Pune	3315[21]	8[22]	100[21]
11.	Hyderabad	4200[23]	7.26[24]	90[11]
12.	Nagpur	504[26]	5[25]	60[26]
13.	Bengaluru	5680 [26]	8.8[27]	92.42 [27]
14.	Chennai	6404[28]	8.38[29]	95
15.	Mysuru	402[27]	7.77[30]	98 [27]
16.	Shimla	119 [30]	20.03[31]	78[32]
17.	Kurnool	330[33]	9.7[34]	64 (210)[35]
18.	Bhubaneswar	500[36]	8[37]	66
19.	Thiruvananthapuram	450	4.78[38]	72
20.	Chandigarh	500[11]	6[39]	92.6

Further, for analysing the recycling rates of Used beverage cartons the fraction of dealers dealing in UBC were evaluated, the same is depicted in table below.

[20] http://mpcb.gov.in/muncipal/pdf/Annual_Report_MSW_2017_18_30012019.pdf
[21] http://www.seas.columbia.edu/earth/wtert/sofos/DBSSRS_Article_-_WTE_INDIA_BRIEF_Revised.pdf
[22] http://www.unep.or.jp/ietc/GPWM/data/T1/IS_2_WasteQC_Pune.pdf
[23] https://www.ijert.org/research/muncipal-solid-waste-management-using-landfills-in-hyderabad-city-IJERTV4IS020842.pdf and https://timesofindia.indiatimes.com/city/hyderabad/hyderabad-tops-in-per-capita-waste-generation/articleshow/64515720.cms
[24] http://www.seas.columbia.edu/earth/wtert/sofos/DBSSRS_Article_-_WTE_INDIA_BRIEF_Revised.pdf
[25] https://www.researchgate.net/publication/304404429_Physiochemical_Analysis_and_Economic_Potential_of_MSW_from_Nagpur_City_Opportunities_under_Swachh_Bharat_Abhiyan
[26] https://www.kspcb.gov.in/Annual%20Report%20for%20the%20Year%202016-17-29112017.pdf
[27] http://www.elcita.in/upload/waste/Waste_Characterization_Study_Report.pdf
[28] chennai.citizenmatters.in/chennais-garbage-long-journey-ahead-to-sustainable-waste-management-129
[29] http://www.cmdachennai.gov.in/pdfs/SMP/H_Chap%20VIII_Soild%20Waste%20Management.pdf
[30] https://www.researchgate.net/publication/317889229_Management_of_waste_as_resource_in_Mysore
[31] http://www.hpccc.gov.in/PDF/Solid_Waste/Urban%20Solid%20Waste.pdf
[32] http://www.shimlamc.org/file.axd?file=2012%2f6%2fMSWM+Plan.pdf
[33] https://journalajst.com/sites/default/files/issues-pdf/5460.pdf
[34] https://globaljournals.org/GJRE_Volume12/3-Municipal-Solid-Waste-Management.pdf
[35] https://journalajst.com/sites/default/files/issues-pdf/5460.pdf
[36] https://timesofindia.indiatimes.com/city/bhubaneswar/bhubaneswar-pollution-panel-penalises-bmc-for-fire-at-waste-dump-yard/articleshow/62807984.cms
[37] http://forest.odisha.gov.in/pdf/Chap_9.pdf
[38] http://cds.edu/wp-content/uploads/2017/03/Sanitation_Dileep-Kumar.pdf
[39] http://www.hpccc.gov.in/PDF/Solid_Waste/Assessment%20of%20Solid%20Waste.pdf

Table 47: Fraction of dealers accepting UBCs.

S.No.	City	Large scale dealer
1.	Delhi	1.00
2.	Faridabad	0.75
3.	Lucknow	1.00
4.	Srinagar	0.40
5.	Jammu	0.43
6.	Kolkata	0.40
7.	Guwahati	0.00
8.	Ahmedabad	1.00
9.	Mumbai	0.50
10.	Pune	0.29
11.	Hyderabad	0.80
12.	Nagpur	0.86
13.	Bengaluru	0.86
14.	Chennai	1.00
15.	Mysuru	0.50
16.	Shimla	0.00
17.	Kurnool	0.75
18.	Bhubaneshwar	0.00
19.	Thiruvanthapuram	0.43
20.	Chandigarh	1.00

Further the percentage of UBCs found at the waste dealer level via bale analysis was evaluated and were used to found the recycling rates. The table below highlights the average percentage of UBCs analysed in mixed paper bales at the dealers in various cities.

Table 48: Average UBCs found in mixed waste paper at various waste dealers

S.No	City	Small scale Dealer	Large scale dealer	Average percentage of UBC
1.	Delhi	3.252%	1.808%	2.53%
2.	Faridabad	2.593%	0.872%	1.73%
3.	Lucknow	0.479%	0.827%	0.65%

S.No	City	Small scale Dealer	Large scale dealer	Average percentage of UBC
4.	Srinagar	0.010%	0.032%	0.02%
5.	Jammu	0.601%	1.304%	0.95%
6.	Kolkata	0.045%	0.033%	0.04%
7.	Guwahati	0.000%	0.000%	0.00%
8.	Ahmedabad	0.058%	0.088%	0.07%
9.	Mumbai	3.279%	14.75%	9.02%
10.	Pune	0.594%	1.755%	1.17%
11.	Hyderabad	6.812%	6.700%	6.76%
12.	Nagpur	0.047%	0.296%	0.17%
13.	Bengaluru	2%	6%	3.69%
14.	Chennai	0.863%	2.260%	1.56%
15.	Mysuru	5.080%	4.327%	4.70%
16.	Shimla	0%	0%	0.00%
17.	Kurnool	1%	0%	0.40%
18.	Bhubaneshwar	0%	0%	0.00%
19.	Thiruvanthapuram	0.103%	0.053%	0.08%
20.	Chandigarh	0.136%	0.152%	0.14%

Considering the fraction of waste paper analysed being around 50% of paper and cardboard market share, the quantity of waste generated in each city, the fraction of paper waste being generated and the percentage of waste collected by informal sector for recycling; the informal recycling rates have been established. The informal recycling rates are given in table below.

Table 49: Recycling rate calculation for UBCs

City Name	consumption of UBC in Tonnes/ annum (2018)	Total paper generation (MSW stream) per year	Percentage of UBC in waste paper (as per analysis)	respondents dealing in PCC	waste paper recovered by informal sector (27%)	fraction assumed for waste constituting UBC that was analysed	UBC collected by informal sector	active recycling TPA	active + inactive recycling	total Recycling rate	corrected recycling rate with limitation for 100% recycling	Total MSW waste generation (TPD)	% paper of total waste generated	MSW collection rate by ULB (%)
Delhi	4602	196633	0	100%	53091	0.5	672	1073	1745	0	1745	9620	6	86
Faridabad	406	9198	0	75%	2483	0.5	14	70	84	0	84	450	6	83
Lucknow	304	82125	0	100%	22174	0.5	72		72	0	72	1500	15	63
Srinagar	387	36007	0	40%	9722	0.5	0		0	0	0	649	15	91
Jammu	397	13260	0	43%	3580	0.5	7		7	0	7	350	10	99
Kolkata	553	107166	0	40%	28935	0.5	2		2	0	2	4837	6	90
Guwahati	791	30815	0	0%	8320	0.5	0		0	0	0	550	15	88
Ahmedabad	167	54020	0	100%	14585	0.5	5	32	37	0	37	3700	4	100
Mumbai	2765	226446	0	50%	61140	0.5	1378	294	1672	1	1672	8250	8	100
Pune	577	96798	0	29%	26135	0.5	44	214	258	0	258	3315	8	100
Hyderabad	1244	111296	0	80%	30050	0.5	812	179	991	1	991	4200	7	90
Nagpur	103	9198	0	86%	2483	0.5	2		2	0	2	504	5	60
Bengaluru	4043	182442	0	86%	49259	0.5	780	2470	3250	1	4043	5680	9	92
Chennai	659	195879	0	100%	52887	0.5	413	17	430	1	430	6404	8	95

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Mysuru	541	11401	0	50%	3078	0.5	36	2559	2595	5	541	402	8	98
Shimla	294	8700	0	0%	2349	0.5	0		0	0	0	119	20	78
Kurnool	85	11684	0	75%	3155	0.5	5	1	6	0	6	330	10	64
Bhubaneswar	54	14600	0	0%	3942	0.5	0		0	0	0	500	8	66
Thiruvananthapuram	170	7851	0	43%	2120	0.5	0		0	0	0	450	5	72
Chandigarh	130	10950	0	100%	2957	0.5	2	62	64	0	64	500	6	93
	18272						4245	6971	11216	61%	54%			

Therefore, the recycling rate for UBCs have been evaluated to be about 54%. Thus, to simplify every second carton of UBC produced gets recycled in India.

6 Recommendations

The recycling rates are governed by economics and are directly proportional to the presence of a good market for UBCs in the city. As per the past reports executed by TERI on UBC management, it was found that the recycling rate was 29-35% in 2011, 48 to 51% in 2015,and has been found to increase further to 54% now in 2019. The recycling rates have increased due to interventions of Tetra Pak working with numerous recyclers and associations to develop solutions, technologies and applications of UBCs. Due to these interventions, the quantity of UBCs going along with mixed paper has reduced and separate collection and recycling of UBCs have been achieved especially in cities like Delhi, Ahmedabad, Mumbai, Pune, Hyderabad, Bengaluru, Chennai, Chandigarh, Mysuru, and Faridabad.

Few of the key points that can be beneficial and help in improving the recycling rate of UBCs are as follows:

1. As compared to the 2015 study, UBCs collected by informal sector in cities of Ahmedabad, Hyderabad and Bengaluru has reduced and viz-a-viz UBCs entering into formal active recycling has increased. This indicates the impact of interventions by Tetra Pak to make UBCs sustainable. There is a further need to get the UBCs into active recycling chain as this will not only increase the market potential but will also reduce the number of stakeholders involved in recycling chain. This will increase the price value for those on the front end of the recycling value chain i.e. waste collectors.
2. In cities of Jammu, Kolkata and Guwahati there is an urgent attention required, as due to the lack of acceptance of UBCs by paper mills, the amount of UBCs collected by informal sector has substantially reduced. Active UBC collection and tie ups with recycling units can help again push UBCs collection and recycling in these cities.
3. Pertaining to other surveyed cities, acceptability of UBCs via paper mills is the first key imperative that can help improve the UBCs acceptability among waste dealers. This will require information, education and capacity building activities with paper mills along with a strong business case depicting profitability scenarios through fibrous contents of paper based UBCs.
4. A separate collection centres for UBCs should be made of which should be linked with material recovery facilities (existing/coming up under the Solid Waste management rules 2016) to facilitate active recycling of UBCs
5. More awareness among waste generators, waste collectors, small and large scale waste dealers can help in segregation of UBCs at source along with straws, however this should have a concerted effort by each stakeholder in the value chain i.e. govt, NGOs, industry, etc
6. Higher prices of UBCs can effectively drive the informal recycling and increase recycling rates. Higher prices can be achieved in two ways a) by reducing the chain for collection and recycling and b) Upcycling UBCs through different products and interventions like sheets being used for making mobile toilets/ material recovery facilities etc.
7. The management of UBCs should be further studied and successful lessons should be replicated at other places
8. Such an exercise (to study the management of UBCs in major cities and identify the recycling rates) may be repeated in every 3 years to assess the improvement in recycling rates.

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[OA No. 22 of 2022] A. Krishna & Ors. versus UOI & Ors. [Reply on behalf of Respondent No.12]

1 message

Raghav Sethi <raghavsethi.trustlegal@gmail.com> Sat, May 7, 2022 at 9:15 PM
To: litigation.life@gmail.com
Cc: RITWIKA NANDA <ritwikananda@trustlegal.in>

Dear Sir,

We write under instructions from our client, *i.e.* the Respondent No.12 in the captioned matter, namely, M/s. Tetra Pak India Private Limited.

Please find attached herewith the scanned copy of the Reply on behalf of Respondent No.12 to the captioned Original Application that we shall be filing before the Hon'ble National Green Tribunal.

Also, please find attached herewith the videos which are annexed in a CD along with the hard copy of the said Reply to the captioned application and marked as Annexure - R12/10.

Please note that by way of the instant email we are affecting prior service upon you.

Request you to kindly acknowledge the receipt of this email.

Reply - A. Krishna & Ors. versus UOI & Ors..pdf

Annexure-10.1 - Deluxe Recycling India Pvt. Ltd...

Annexure-10.2 - No.1 Pulp Line Equipment - UBC ...

Regards

Raghav Sethi
Advocate
Principal Associate

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