

4th Indo-European Conference
on Standards & Emerging Technologies

7th December 2023 | The LaLiT, New Delhi, India

STANDARDIZATION IN CIRCULAR ECONOMY IN INDIA – E-WASTE & PLASTIC

Ajay Kumar Lal
Scientist-F/Senior Director
&
Head, Chemical Department
Bureau of Indian Standards

CIRCULAR ECONOMY

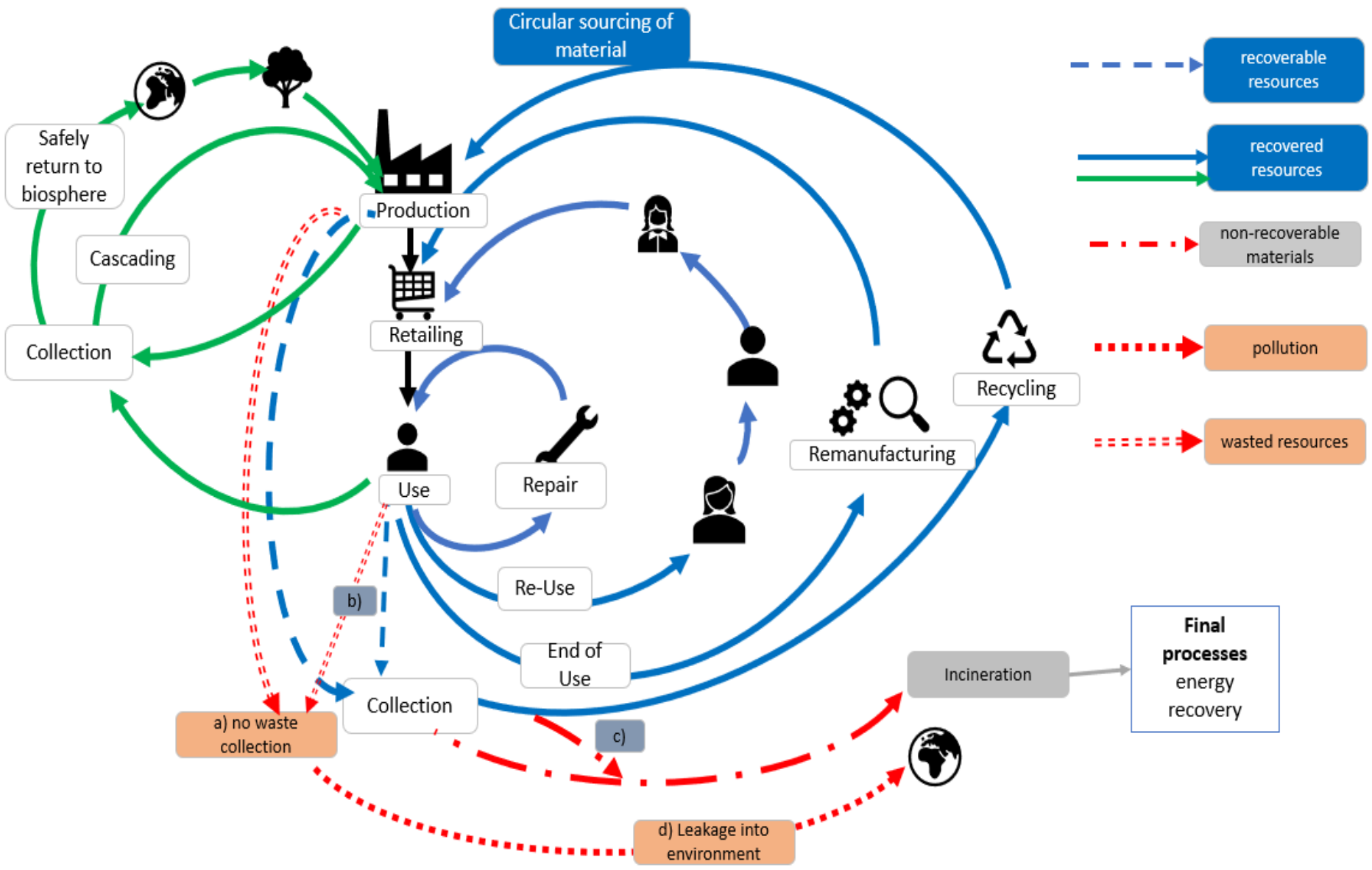


An economic system that uses a systemic approach to maintain a circular flow of resources, by regenerating, retaining or adding to their value, while contributing to sustainable development.

SUSTAINABILITY

State of the global system, including environmental, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their own needs.





Resource flows and (non) recoverable resources

Approach to Standardization in Circular Economy

✓ Develop the expertise in the technical committees:

- Through identification and engagement of relevant experts and industries working in this field;
- Through identification and engagement of Academia and research institutes having expertise in this area.

✓ Gather the Literature:

- Check the availability of standards being followed globally;
- Review the current practices being followed in the industries;
- Check the status of the policies and regulations in this area;
- Initiate the process for case studies in collaboration with the academia and industries.



✓ Collect feedback/inputs from the stakeholders:

- Inputs in the form of comments, suggestions, case studies, views, working drafts, guidelines, etc.;
- Organization of Webinars, Seminars, Conferences to spread awareness and to gather more inputs from the stakeholders;
- Idea exchange forums such as Indo-German Quality Infrastructure Working Group also as a tool to get feedbacks from other countries and NSB's.

✓ Prepare the Working Drafts:

- Based on the inputs received, working drafts to be formulated;
- Separate expert panels also to be constituted, wherever felt necessary;



NATIONAL MIRROR COMMITTEE



- CHD 34 Environmental Management Sectional Committee
- SCOPE: To formulate Indian standards in the field of environment management tools and systems,

Including:

- ✓ Life cycle assessment
- ✓ GHG management
- ✓ Climate change and adaptation
- ✓ Environmental labelling
- ✓ Circular economy

but excluding:

- ✓ test methods of pollutant
- ✓ Setting limit values regarding pollutants of effluents
- ✓ setting environmental performance levels
- ✓ standardization of products

International Liaison:

- ✓ ISO/TC 323 Circular Economy
- ✓ ISO/TC 207 Environmental Management
- ✓ ISO/TC 265 CO2 Capture, transportation and geological storage



Through CHD 34 committee, various experts from India are participating actively and regularly in all the five working groups of ISO/TC 323 to contribute in the development of the following 6 documents:

i.ISO/DIS 59004 Circular Economy — Terminology, Principles and Guidance for Implementation

ii.ISO/DIS 59010 Circular Economy — Guidance on the transition of business models and value networks

iii.ISO/DIS 59020 Circular Economy — Measuring and assessing circularity

iv.ISO/CD TR 59031 Circular economy — Performance-based approach – Analysis of cases studies

v.ISO/DTR 59032 Circular economy — Review of business model implementation

vi.ISO/DIS 59040 Circular Economy — Product Circularity Data Sheet

Focus Areas identified by NITI Aayog to aid Circular Economy



- I. Scrap Metal (Ferrous and Non-Ferrous)
- II. Li-ion Batteries
- III. Tyre and Rubber Recycling
- IV. Gypsum
- V. End-of-life Vehicles (ELVs)
- VI. Electronic Waste
- VII. Toxic and Hazardous Industrial Waste
- VIII. Municipal Solid and Liquid Waste
- IX. Agriculture Waste
- X. Used Oil Waste (generated from tools and machines)
- XI. Solar Panels



E-WASTE



BIS has formulated the following standards to aid the implementation of circular economy in E-Waste:

- **IS 16584 :2017/ IEC/TR 62635 : 2012** Guidelines for End-of-Life Information Provided by Manufacturers and Recyclers and for Recyclability Rate Calculation of Electrical and Electronic Equipment
- **IS 17343:2020/ IEC 62824: 2016** Guidance on Material Efficiency Considerations in Environmentally Conscious Design of Electrical and Electronic Products
- **IS 18284: 2023** Repair of Distribution Transformers – Code of Practice
- **IS 17862: 2022** Storage Collection Dismantling and Recycling of E-Waste – Guidelines



PLASTIC



IS 14534: 2023 Plastics — Recovery and Recycling of Plastics Waste — Guidelines (Second Revision).

- ✓ This standard prescribes guidelines for the selection, segregation and processing of plastics waste/scrap. It establishes the different options for the recovery of plastics waste arising from pre-consumer and post-consumer sources. The standard also establishes the quality requirements that should be considered in all steps of the recovery process.
- ✓ This standard also prescribes guidelines to the manufacturers of plastic products with regard to the marking to be used on the finished product in order to facilitate identification of the basic raw materials, thus, to make sorting and recycling easier.

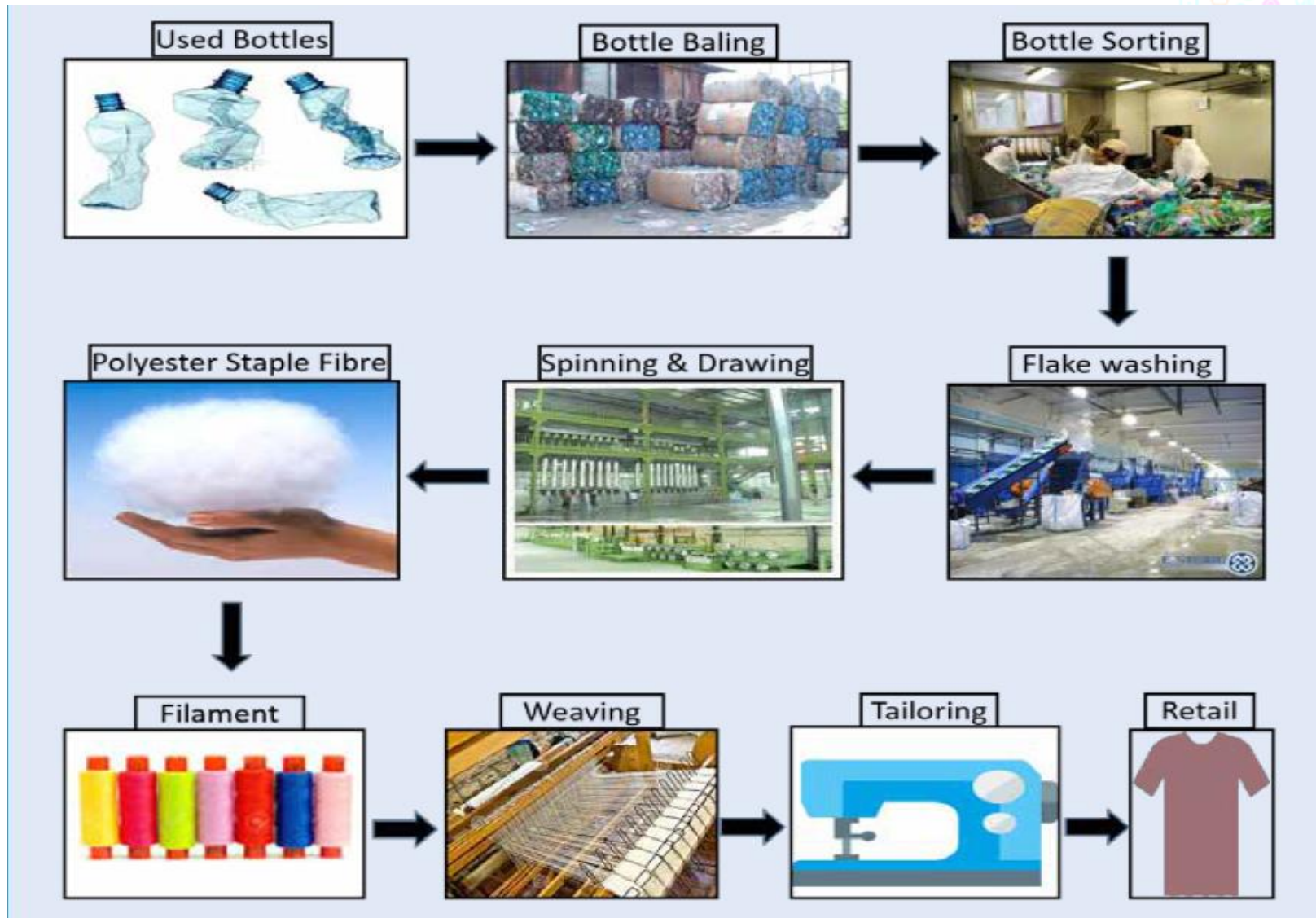




Mechanical Recycling



PET Bottle Recycling – well organized in India



Feedstock or Chemical Recycling

- Plastics can be depolymerized by pyrolysis process and equivalent process;
- Can be fed back into the cracking process to form into their basic monomeric chemical constituents or into hydrocarbon fractions;
- chemicals can then be used either as polymerization feedstock or in other useful applications and chemical processes;
- Useful in waste generated out of mixed plastics, commingled plastics and plastics materials made out of a combination of different plastic

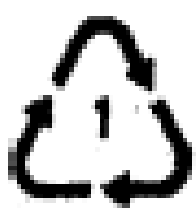


•IS 14535: 1998 Recycled plastics for the manufacturing of products – Designation

This standard is intended for the identification and classification of the recycled plastics material on the basis of its basic properties and applications. This standard applies to recycled plastics material ready for normal use without any further modifications.



Identification Marking



PET



HDPE



V



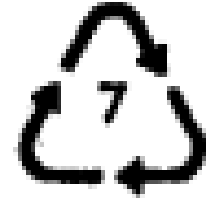
LDPE



PP



PS



OTHER

PET — Polyethylene terephthalate, HDPE — High density polyethylene, V — Vinyl (PVC), LDPE — Low density polyethylene, PP — Polypropylene, PS — Polystyrene and other means all Other resins and multi-materials, like ABS (Acrylonitrile butadiene styrene), PPO (Polyphenylene oxide), PC (Polycarbonate), PBT (Polybutylene terephthalate), etc.



Key challenges faced in the standardization in Circular Economy



- ❑ Identification and engagement of relevant experts in this field;
- ❑ Paucity of academic and research institutions involved in this area;
- ❑ Lack of awareness among the industry and other stakeholders;
- ❑ Non-availability of global standards for guidance;
- ❑ Trade issues;





THANKS!



4th Indo-European Conference
on Standards & Emerging Technologies

7th December 2023 | The LaLiT, New Delhi, India

