

# ***Lead Recycling in India - Present & Future Perspectives***



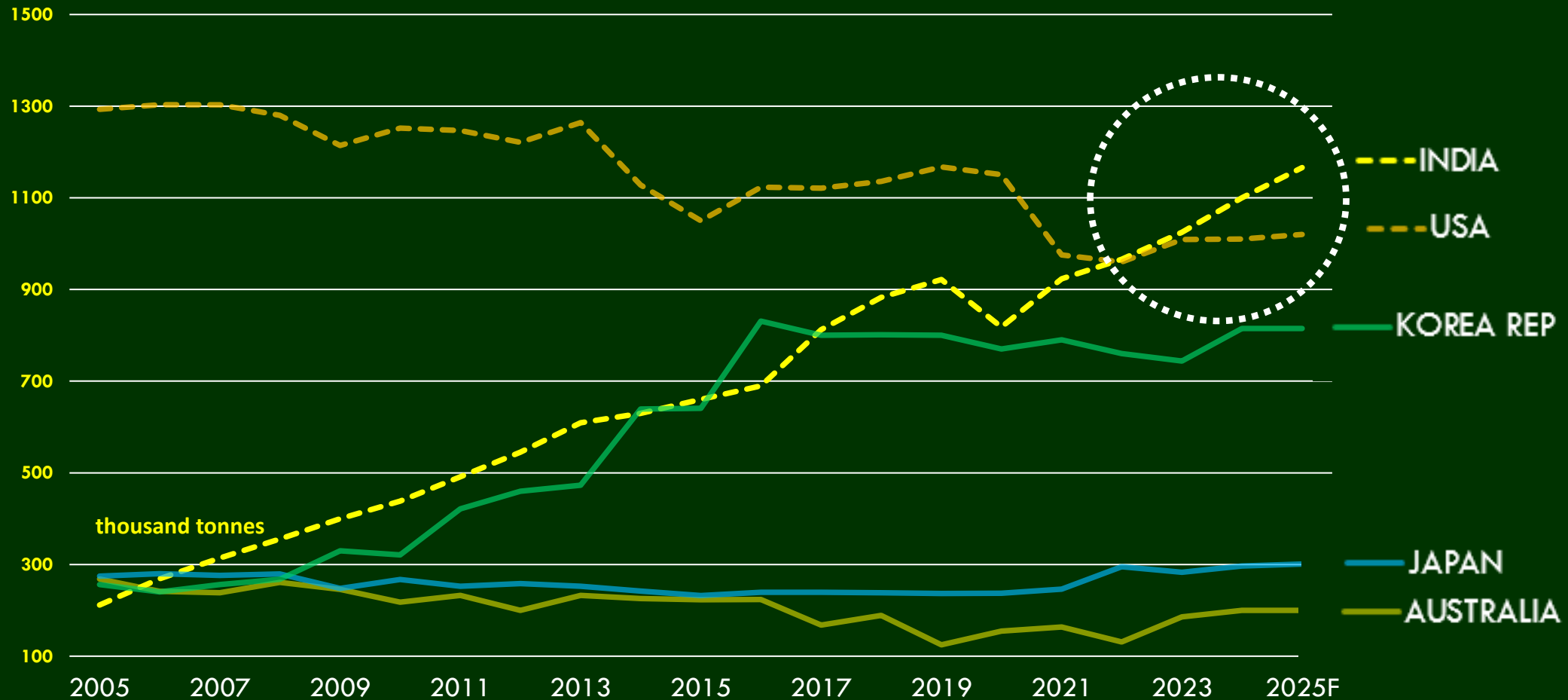
**RECYCLE100**  
**1 & 2 Sept 2025**  
**Kota KinaBalu, Malaysia**



***L Pugazhenty, Executive Director  
India Lead Zinc Development Association &  
Past President, The Indian Institute of Metals***

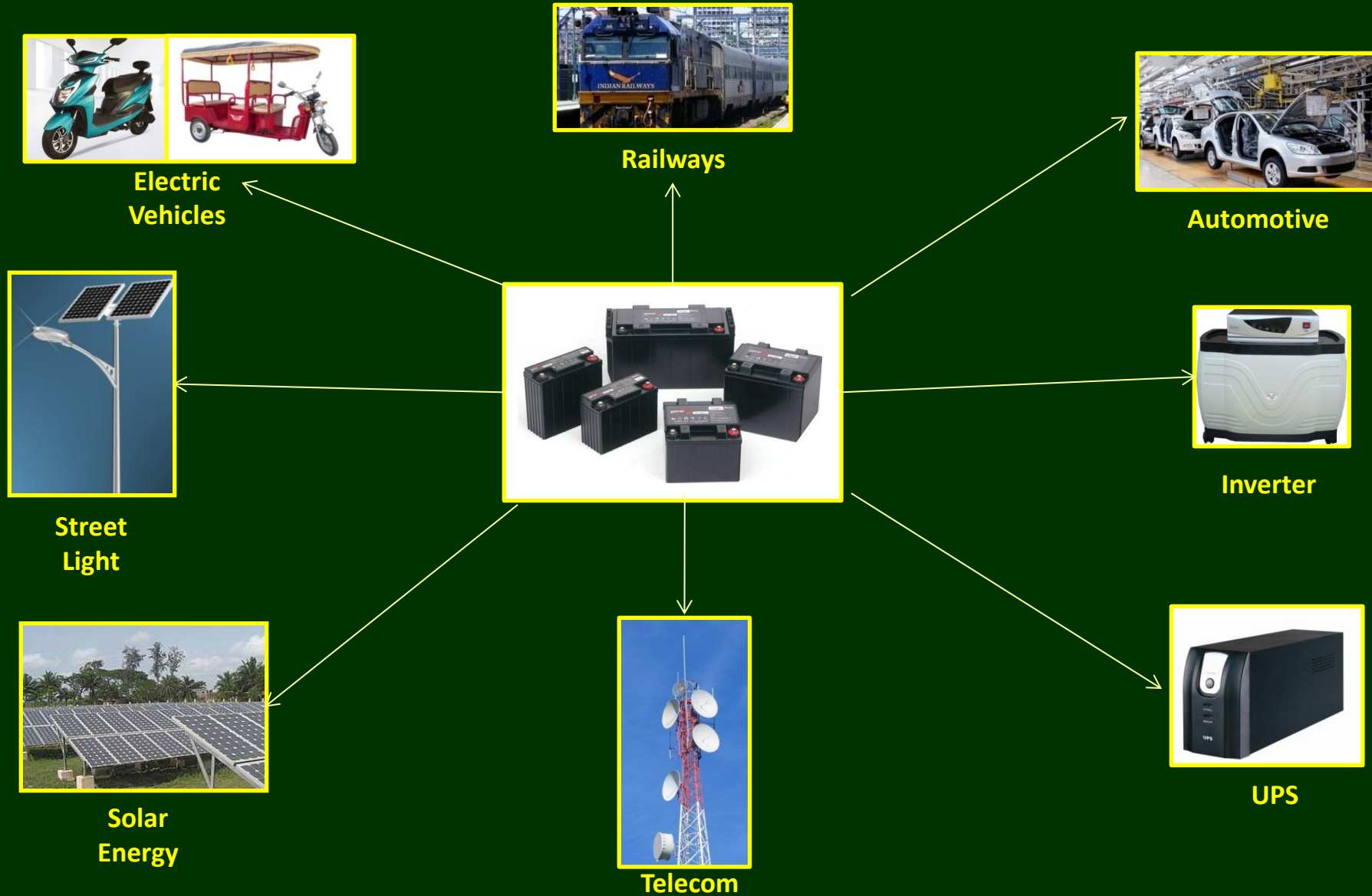
# INDIA'S LEAD METAL OUTPUT

Remarkable growth in India over the last 2 decades

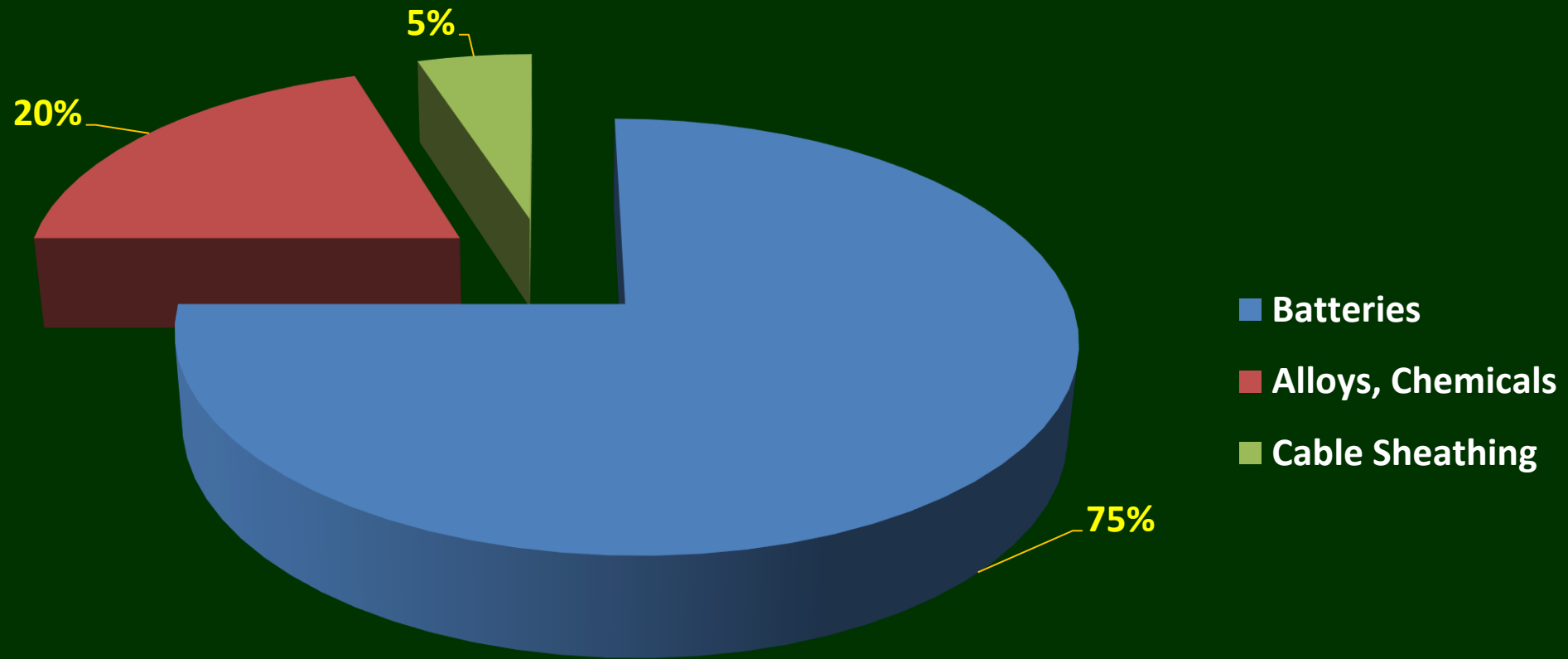


(Source: International Lead & Zinc Study Group)

# *Lead Battery – Touches Our Daily Lives*



# ***LEAD USAGE IN INDIA***



***Total Lead Consumption: 1.20 million tonnes***

# *Lead Batteries*

- *Affordable*
- *Safe*
- *Reliable Energy Source*
- *Most Recycled Material (99%)*
- *Cheaper Input for Reuse*
- *Continuous Technology Upgradation*
- *Well Established, Steady Growth*

## *Market Trends in India*

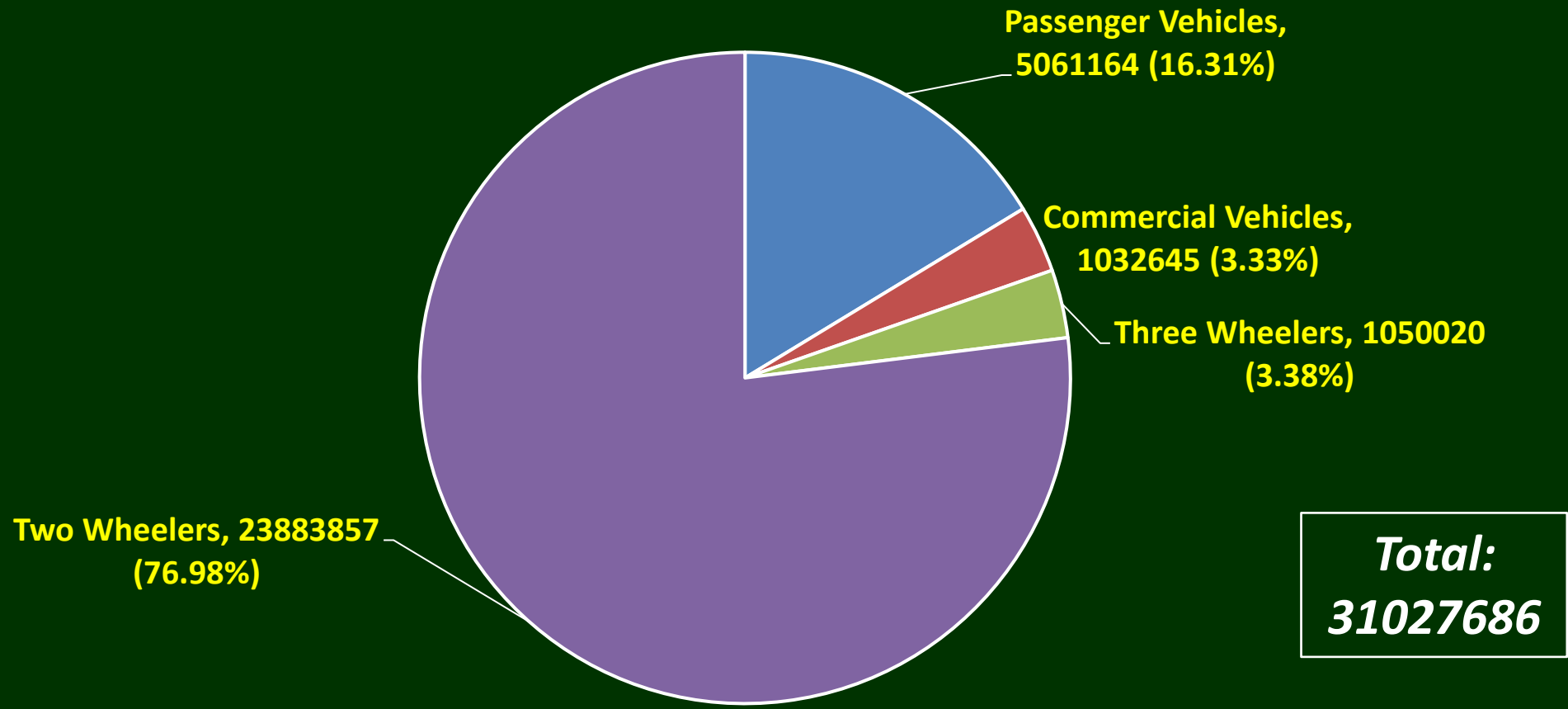
*Current Market Size : USD 300 Billion (estimated)*

*CAGR, 2024-2030 : 6%*

# *Indian Automobile Production Trends*

## *(2024-25)*

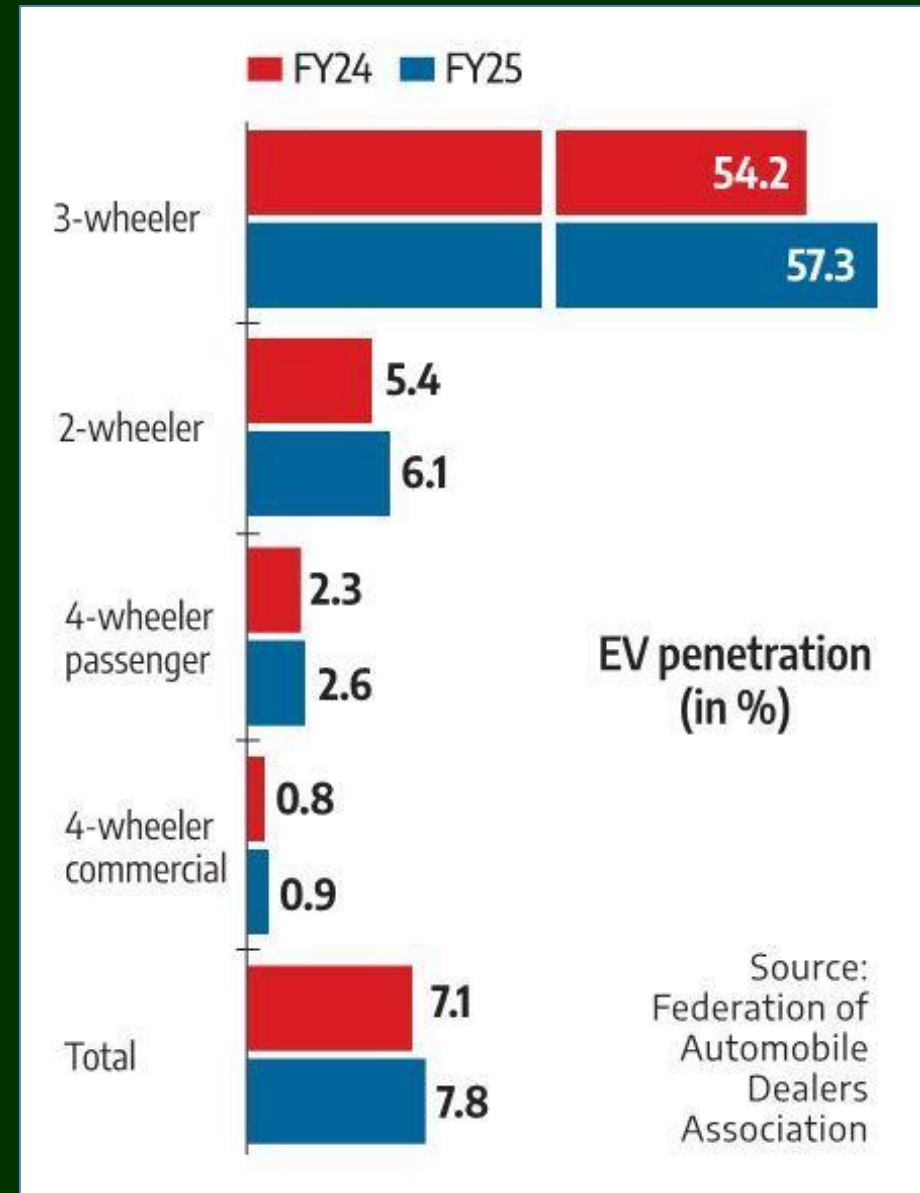
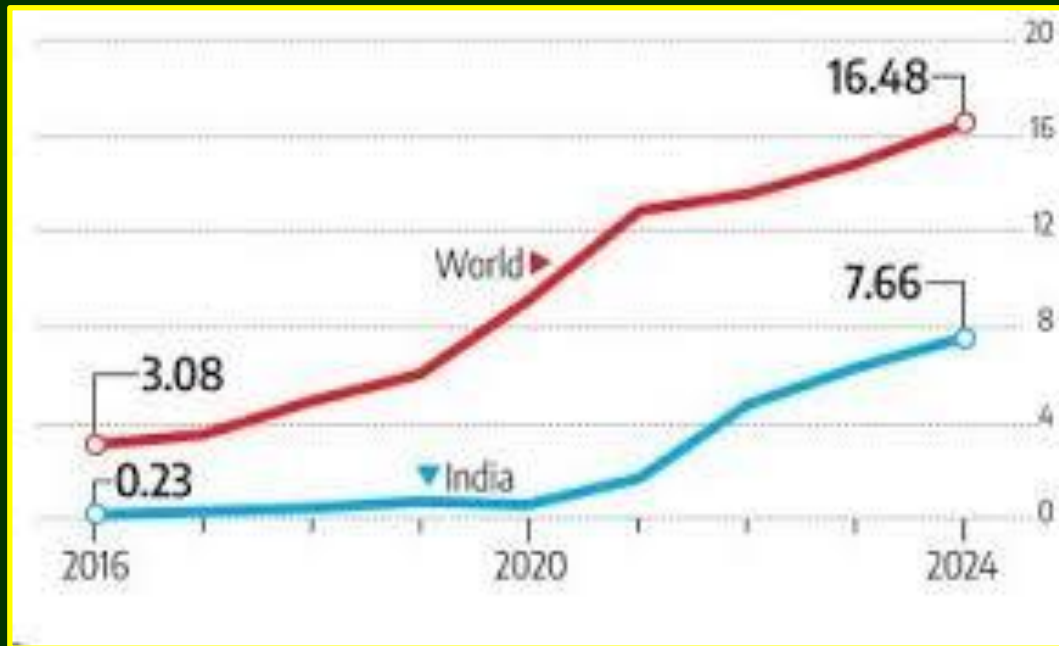
*(in units & %)*



(Source: SIAM)

# INDIA'S ELECTRIC MOBILITY MISSION

## EV Adoption (%)



# Renewable Energy Mission

## Renewable Energy Targets by 2022: 175 GW



100,000 MW  
OF SOLAR



60,000 MW  
OF WIND

5,000 MW  
OF SMALL HYDRO



10,000 MW  
OF BIO ENERGY



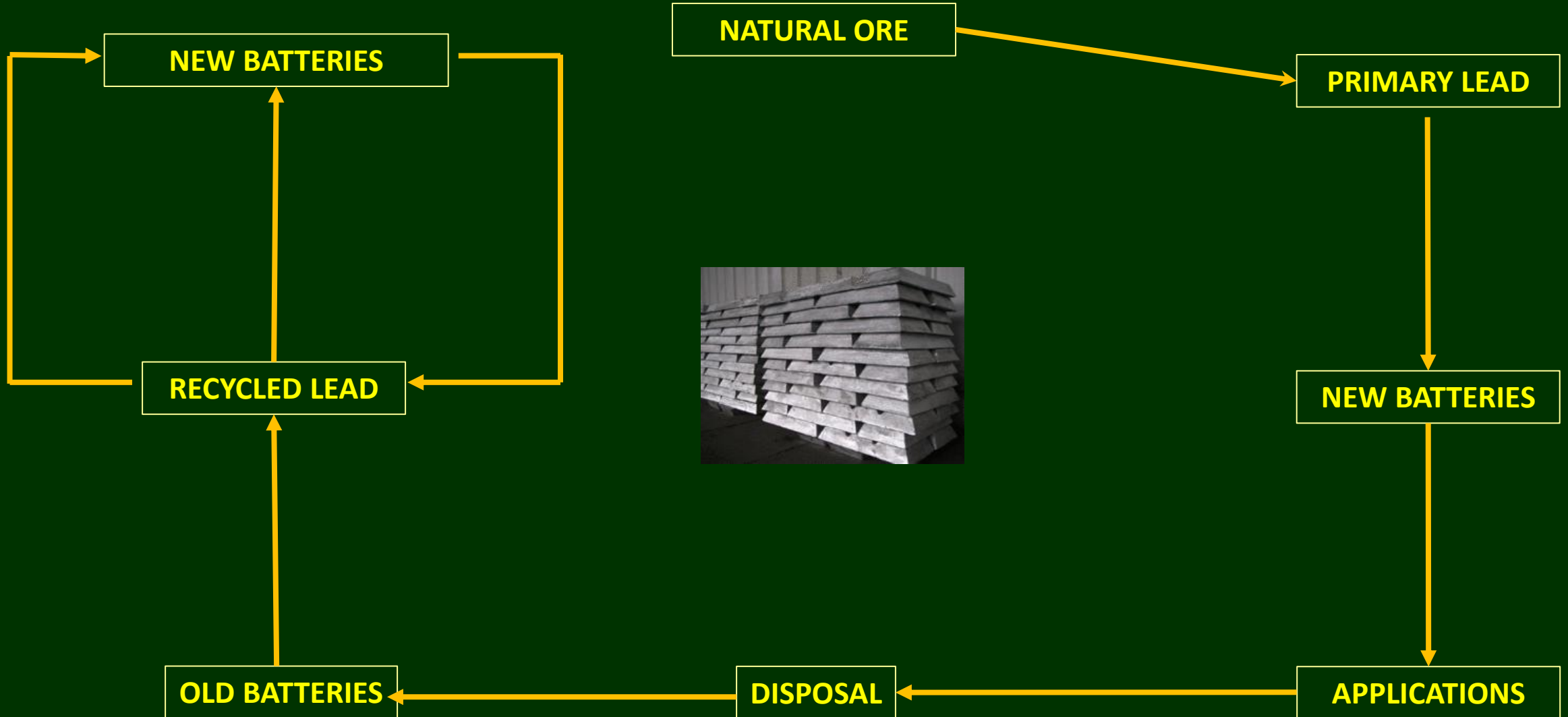
**By 2030: 500 GW**

## Ultra Mega Solar Park



## Wind Energy

# *Lead – Ideal Example for Circular Economy*



# ***INDIAN LEAD INDUSTRY-AN OVERVIEW***

*(million tonnes)*

- 1. Secondary Lead Production : 0.80***
- 2. Primary Lead Production : 0.25***
- 3. Imports : 0.15***
- 4. Total Lead Consumption : 1.20***
- 5. Authorized Capacity : 3.50***
- 6. No. of Authorized Units : 675***

***Total Lead Consumption: 1.50 million tonnes by 2028  
(estimated)***

# ***BATTERY WASTE MANAGEMENT RULES - 2022***

❖ ***Notified in 2022, superceding BMHR 2001***

❖ ***Waste Battery:***

- ***Used and/or EOL batteries***
- ***Pre-consumer, off spec batteries***
- ***Expired Batteries***
- ***Discarded batteries***

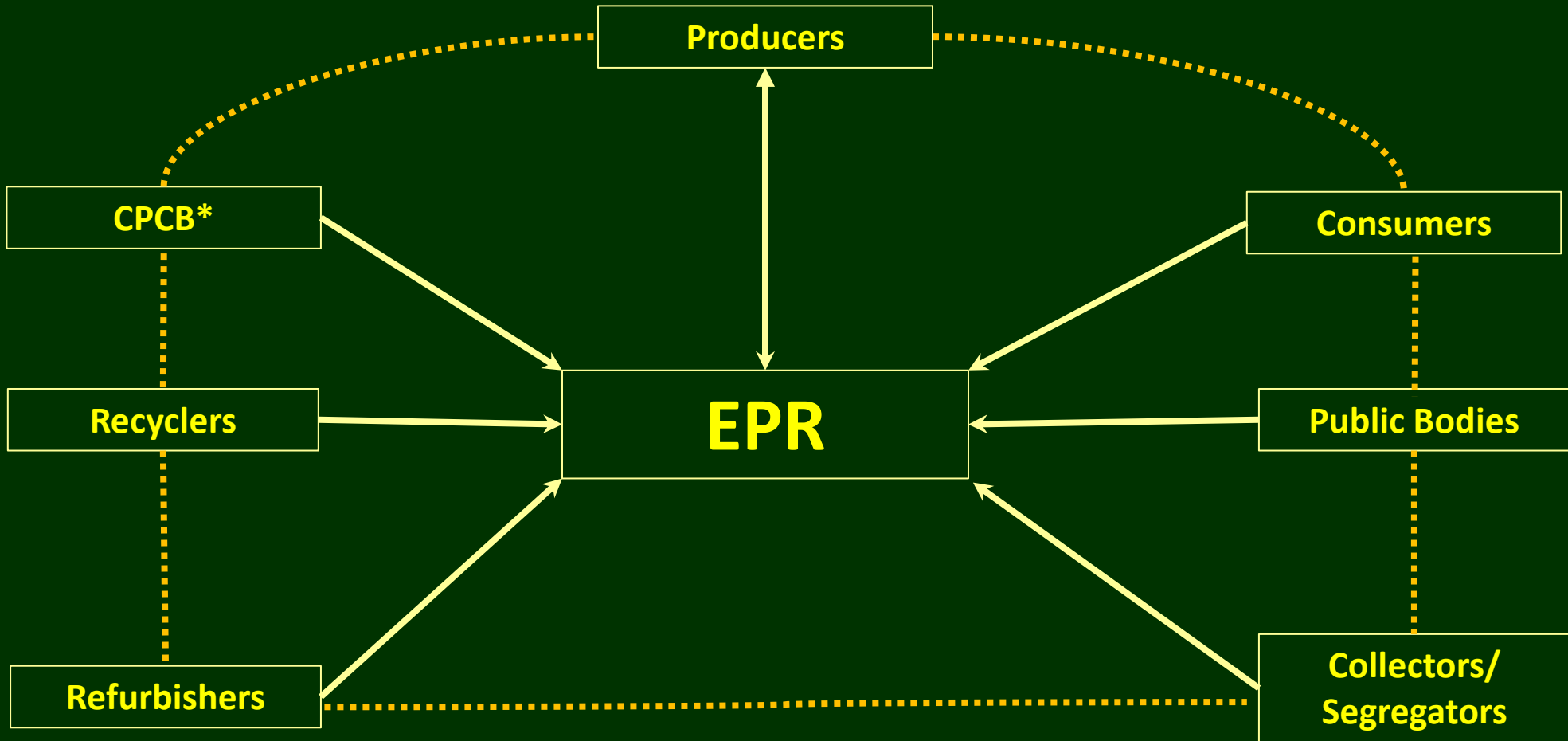
❖ ***Applies to:***

***Every producer, dealer, consumer & entities involved in collection, segregation, transport & recycling***

❖ ***Exempts:***

***Batteries used in defence & space equipments***

## *EPR & Multi Stakeholder Responsibilities*



\*CPCB – Central Pollution Control Board

# ***ROLE OF PRODUCER***

- ***Extended Producer Responsibility (EPR)***
- ***All batteries to be recycled/refurbished  
(no land filling, incineration)***
- ***To meet collection/recycling/refurbishing targets***
- ***Submit EPR Plan to CPCB***
- ***Online registration***
- ***Certificate of EPR Registration***
- ***Periodic renewal of Regn***
- ***Deposit Refund/Buyback Scheme***
- ***Annual Returns, 30 June, every year***
- ***Labelling & Warnings***

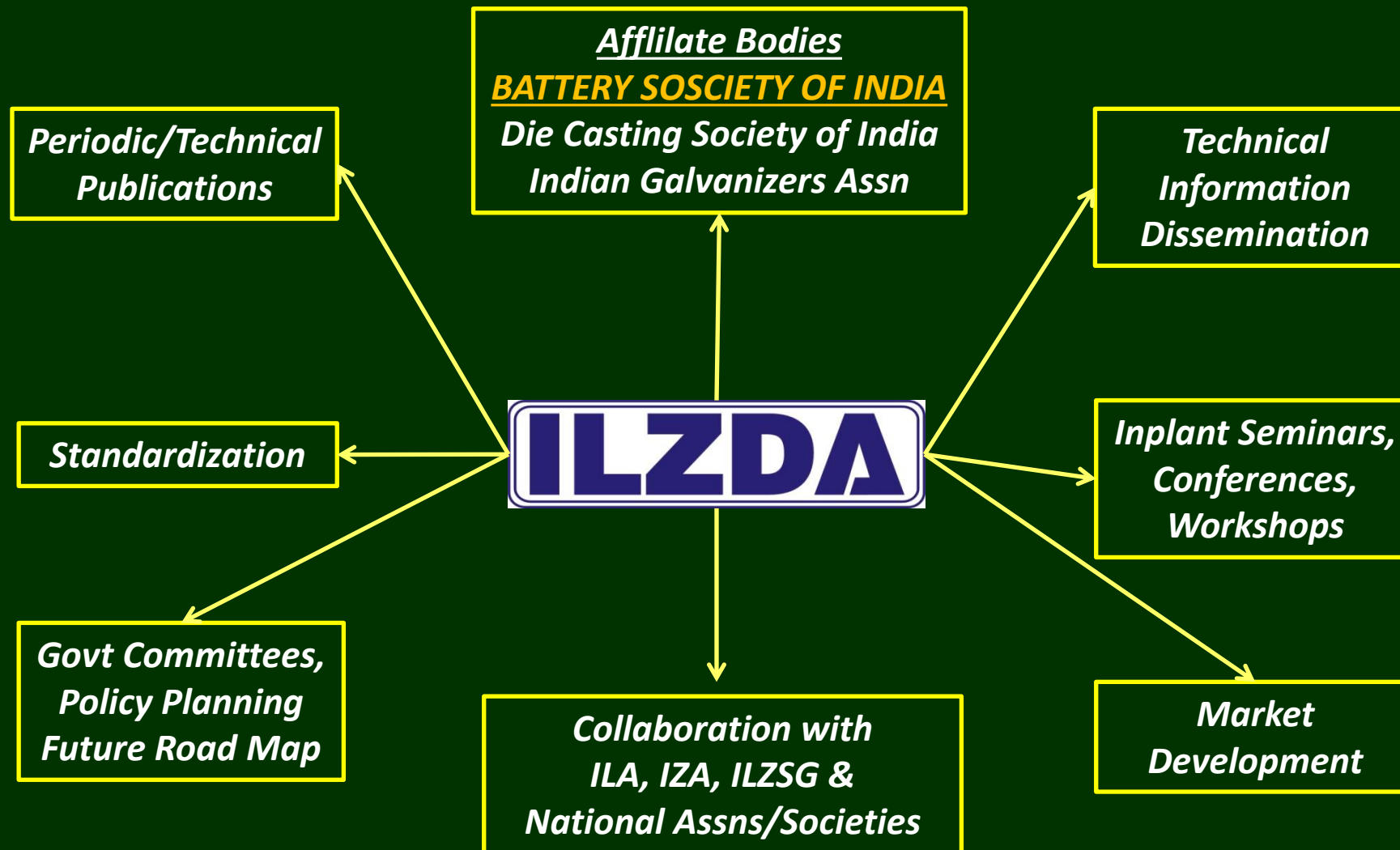
# ***BATTERY COLLECTION TARGETS***

	TYPES OF BATTERIES	100%
a)	Automobile	by 2026 - 27
b)	Industrial	by 2029 – 30
c)	Four Wheeler, Electric	by 2037 – 38
d)	Three/Two Wheelers, Electric	by 2032 - 33

# ***IMPERATIVE ACTIONS***

- ***Adoption of Best Practices***
- ***To eliminate **Informal Recycling*****
- ***Blast Furnaces to be phased out gradually***
- ***Register battery dealers &  
collect periodic returns***
- ***To audit all Regd Recyclers, statewide***
- ***Lead Battery Mfrs to ensure dealers  
follow regulations***
- ***Fix up minimum scale capacity  
for Lead Recycling***
- ***CSR – Citizen's Social Responsibility***

# INDIA LEAD ZINC DEVELOPMENT ASSOCIATION (63 years old)





# International Conference on LEAD & LEAD BATTERIES -CRAFTING A GREEN FUTURE

2 & 3 December 2024, New Delhi

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# LEAD ZINC UPDATE ilzda e-newsletter

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## Global Lead & Zinc Scenarios

World Refined Lead Supply & Usage 2020-2025												
000 tonnes	2020	2021	2022	2023	2024	Jan – May		2025	Feb	Mar	Apr	May
						2024	2025					
Mine Prodn.	4437	4552	4433	4459	4555	1798	1811	311.7	380.5	377.3	382.8	
Metal Prodn.	12545	13039	12829	13271	13039	5409	5507	1061.0	1142.1	1122.6	1111.6	
Metal Usage	12392	12995	13006	13104	13010	5341	5484	1039.9	1143.2	1128.8	1110.5	

World Refined Zinc Supply & Usage 2020-2025												
000 tonnes						Jan – May		2025				
	2020	2021	2022	2023	2024	2024	2025	Feb	Mar	Apr	May	
Mine Prodn.	12264	12793	12494	12228	12002	4742	4998	930.9	1033.8	1044.0	1019.3	
Metal Prodn.	13855	13956	13416	13913	13495	5623	5507	1017.2	1120.3	1120.8	1116.4	
Metal Usage	13345	14048	13446	13588	13510	5409	5419	953.5	1106.9	1103.5	1160.5	

(Source: ILZSG)

## LEAD:

- Provisional data reported to the ILZSG indicate that world refined lead metal supply exceeded demand by 22kt during the first four months of 2025. Over the same period total reported stock levels increased by 13kt.
- Global lead mine production rose by 1.4%. This was primarily a consequence of increases China, Peru and Europe, where new mining capacity was recently commissioned.
- Growth of 1.4% in global lead metal production was mainly the result of rises in Canada, China, India, the Republic of Korea and Sweden. However, these increases were partially offset by reductions in Japan, Kazakhstan and the United Kingdom.
- Refined lead metal usage grew by 2.6%, mainly a result of rises in the Republic of Korea, Philippines, Taiwan (China), the United States and Vietnam. Demand in Europe also rose, influenced by increases in the Czech Republic, France and Germany. In India and Japan, however, usage was lower than during the same period of 2024. Chinese imports of lead contained in lead concentrates grew by 43% to 255kt. Net imports of refined lead metal totalled 4kt, compared to net exports of 12kt in the first four months of 2024.

## ZINC:

- According to preliminary data recently compiled by the ILZSG, the global market for refined zinc metal was in surplus by 151kt over the first four months of 2025 with total reported inventories decreasing by 53kt.

**ILZDA**

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# **International Conference on LEAD & LEAD BATTERIES – UNLOCKING THEIR TRUE POTENTIAL 1 & 2 December 2025, IIC, New Delhi**



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# *THANK YOU*



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