



Thematic Working Group
for policy framework for ODS and HFC recovery, reclamation and destruction
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Extended Producer Responsibility in Pakistan (EPR)

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Extended Producer Responsibility: An Overview



EXTENDED PRODUCER RESPONSIBILITY

- **EPR** is a policy approach that makes **producers responsible** for their products along the entire lifecycle, including at the post-consumer stage.
- An EPR policy **shifts responsibility** (physically and/or economically; fully or partially) upstream to producers; and the provision of incentives to producers to take into account **environmental considerations** when designing products.
- Governments that embrace the EPR approach shift financial and sometimes operational responsibility of waste management and material recovery from governments to producers.

Before EPR:

Government and/or Consumers
responsible for End-of-life Waste
Management

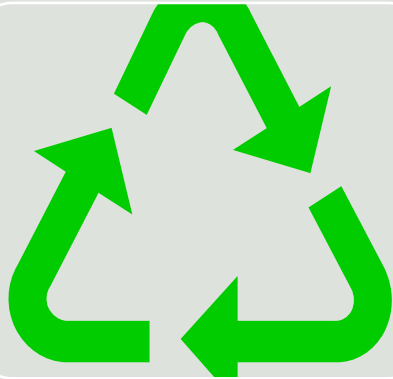
EPR

After EPR:

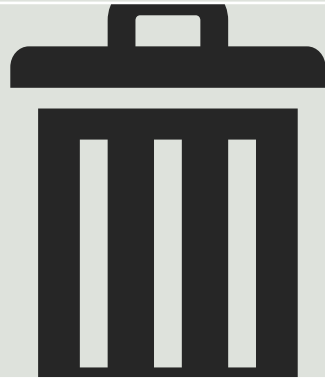
Producers are responsible for End-of-
life Waste Management



EPR OBJECTIVES



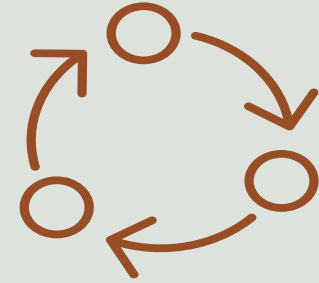
Reducing use
of (virgin)
resources
and materials



Waste
Prevention



Reducing
impact on
environment



Closing
material use
loops
(circular
economy)

WHY EPR?

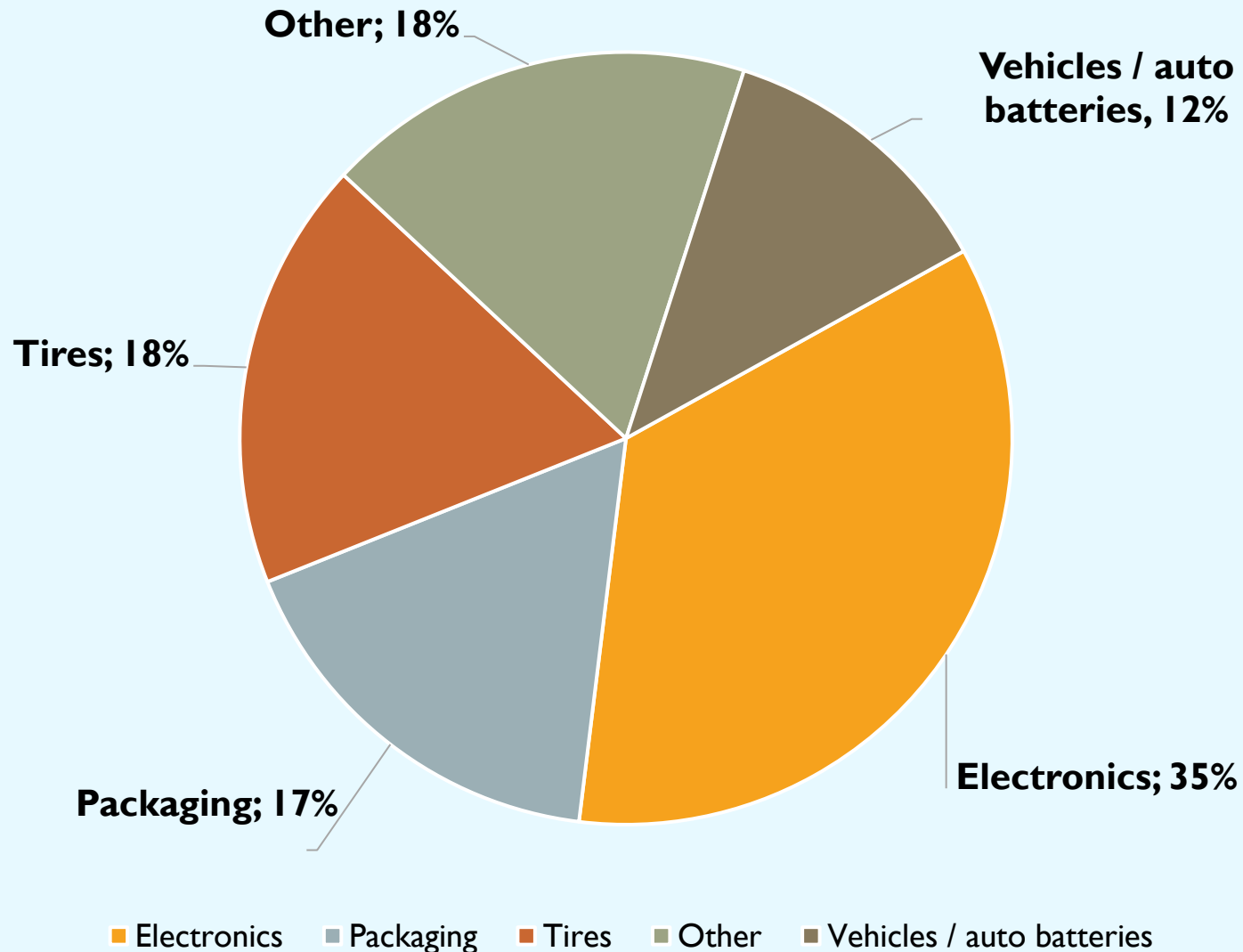
NEED

- E-waste fastest growing solid waste
- In 2022, ~**62 million MT of e-waste** was produced globally. **Only 22.3%** was documented as **formally collected**
- **Lead** is usually released from e-waste
- In RAC, in addition to solid waste, one of the major waste is **refrigerants**
- Informal handling has adverse health effects.
- By 2050, the volume of e-waste could top **120 million tonnes** annually
- Estimated value of materials in e-waste is roughly **USD 60 Billion**, which is more than GDP of most countries

IMPACT

- **Shift** end-of-life management cost from local govt. to producers & consumers.
- Improved waste collection & increase in material recovery (e.g. recycling) rates.
- Treaty **compliance**: Basel Convention, Montreal Protocol, and Kigali
- Lowers pollution and greenhouse **gas emissions** (especially important for refrigerants, plastics, and e-waste).
- innovation/ **eco-design**, leading to less toxic, more recyclable products.
- Supports a **circular** economy
- Creates **markets & jobs** for recycling & repair

RANGE OF PRODUCTS AND MATERIALS COVERED



81 countries

have adopted e-waste policy, legislation or regulation.

67 countries

have legal provisions on EPR for e-waste.

37 countries

have provisions on e-waste recycling rate targets.

48 countries

have provisions on e-waste collection rate targets.

Source: The Global E-waste Monitor 2024

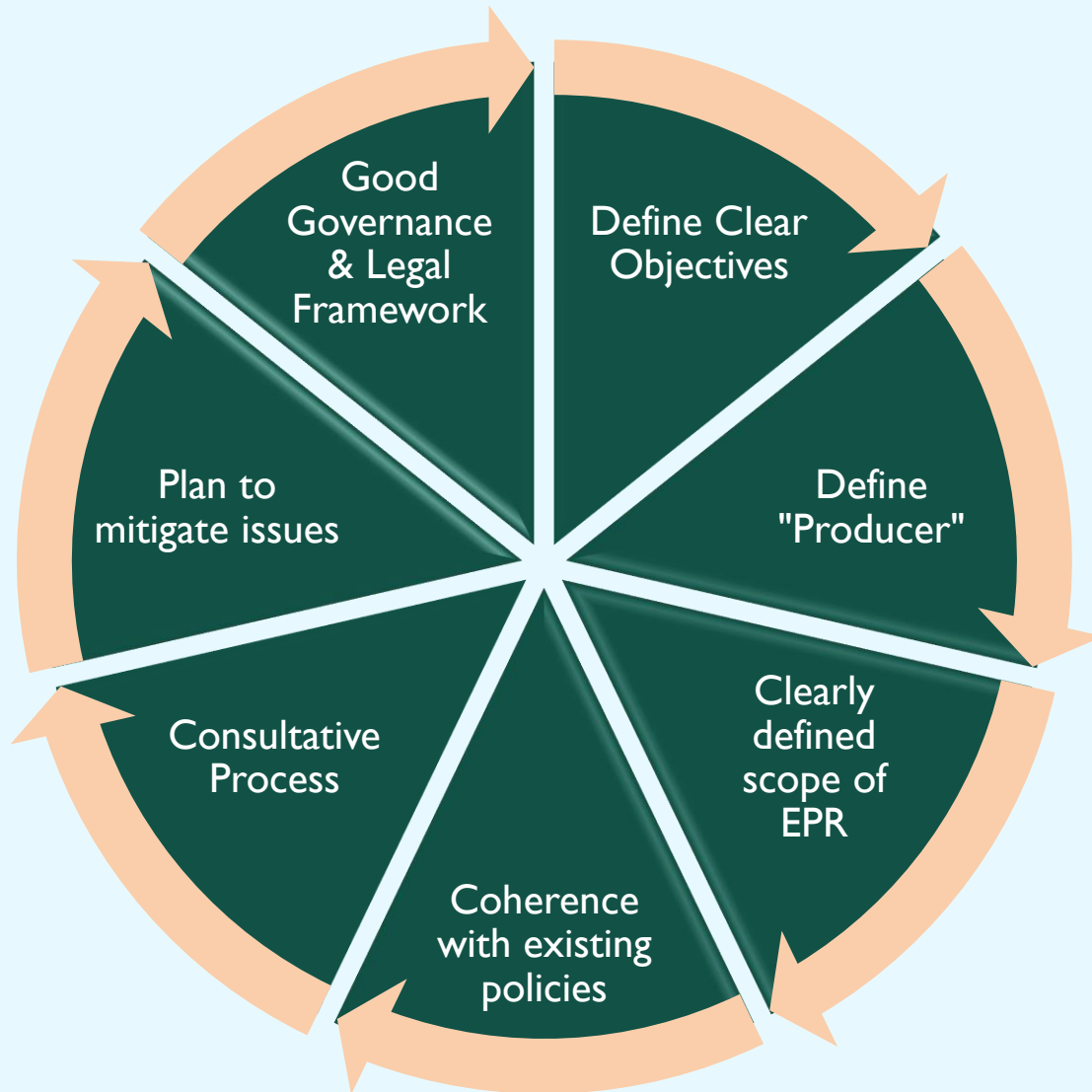


SUSTAINABLE REFRIGERANT MANAGEMENT

- RAC Equipment comes under category of EEE covered by EU WEEE Directive.
- Temperature exchange equipment contains refrigerants which contributes to ozone depletion and climate change, if released into the air.
- 73% of all temperature exchange equipment worldwide is managed in an environmentally unsound manner.
- Countries with no e-waste legislation release refrigerants into atmosphere. In 2022, **145 billion kg** of CO₂-eq. emissions escaped into environment because of mismanagement of refrigerants.
- Countries with e-waste legislation usually provide for the safe degassing and recycling or disposal of the refrigerants, but fail to collect and manage all temperature exchange equipment, and also face significant illegal scavenging and emissions from the compressors containing a significant part of the refrigerants.



DESIGN OF EPR



Enforcement

- Mandatory or
- Voluntary

Responsibility

- Individual or
- Collective

Participation

- Monopolistic or
- Competitive

Ownership

- Industry-led or
- State-led

TYPES OF EPR

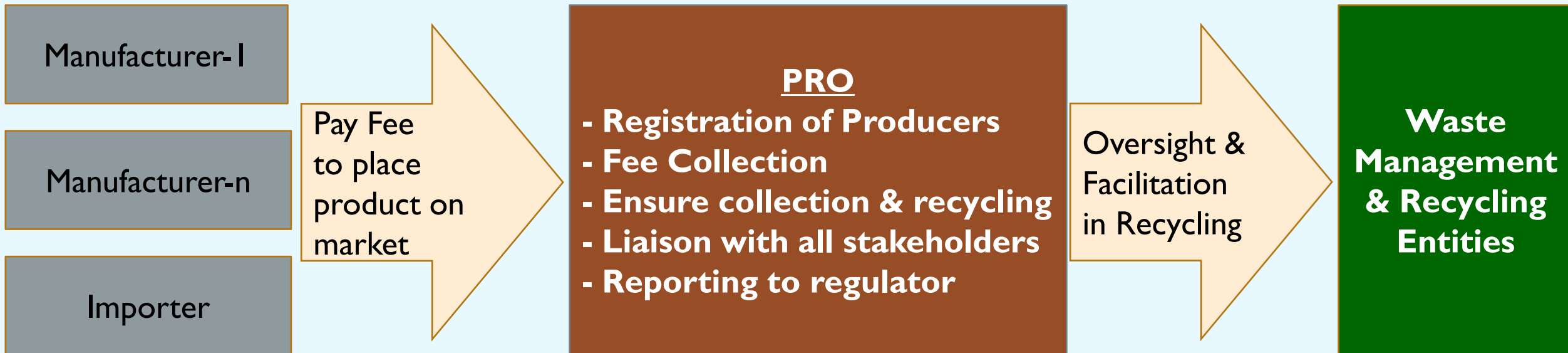
Some common types of EPR schemes used worldwide are:

- **Product take-back requirements (70% of worldwide schemes)**
- **Economic and market-based instruments**
 - Deposit-refund
 - Advanced Disposal fee (ADF) (16% of schemes)
 - Material taxes
 - Upstream combination tax/subsidy (UCTS)
- **Regulations and performance standards**
- **Information-based instruments (raising public awareness)**



WORKING OF PRO

The **Producer Responsibility Organization (PRO)** is considered the most important stakeholder in a collective EPR system and manages the development and maintenance of the system.





EPR PAKISTAN SCENARIO

EPR STUDY – PAKISTAN

In 2024, IN Consult carried out study on EPR in RAC Sector for Pakistan funded by GIZ-COPA, findings include but not limited to:

- Release of Ozone Depleting Substances in air is **not yet prohibited**.
- Certification of RAC Technicians is currently **not mandatory**.
- Government of **Pakistan is a signatory of Basel** Convention; however, the hazardous waste policy **does not explicitly mention e-waste**.
- No monitoring scheme of recovered ODS has been implemented in Pakistan, and implementation of such schemes is tied with establishment of RRR centers.
- RAC waste collection already exists via technicians, recyclers, and scrap dealers.
- 60%+ of consumers sell old appliances through these channels or online
- Refrigerant recovery is negligible — 50–70% remains in appliances at end-of-life and is vented into the air when appliance is broken down.



EXISTING PRACTICES FOR RAC e-WASTE IN PAKISTAN

In the RAC waste management in Pakistan, the main stakeholders are scrap dealers usually working in the undocumented economy or more commonly termed as the informal sector. The typical flow of RAC appliances in Pakistan is shown in the figure below:



Typical Flow of RAC Waste in Pakistan

PAKISTAN RAC: TOTAL INSTALLED & ANNUAL RETIRING

RAC Sub-sector	Total Population of appliances 2023	Average Equipment Life Years	Estimated Annual No. of equipment retired
Domestic Refrigerator/ Freezers	30,108,981	10	3,010,898
Commercial Refrigerator/ Freezers	3,576,002	10	357,600
Domestic Air conditioner	13,810,843	6	2,301,807
Total	47,495,826		5,670,305



PAKISTAN: ANNUAL IMPACT OF REFRIGERANTS RELEASE

Description	R 22	R 410
Domestic Air Conditioners		
Quantity of Domestic Air Conditioners	1,450,139	851,669
Average charge per unit kg	1.25	1.13
Total annual quantity of refrigerant MT	909	481
GWP	1,810	2,088
Total Annual Emission from AC MT CO ₂ eq	1,645,719	1,003,486
Description	R 134A	R 600A/R 290
Domestic & Commercial Refrigerators		
Quantity of domestic & commercial ref.	2,560,059	808,440
Average charge per unit kg	0.25	0.23
Total annual quantity of refrigerant MT	256	73
GWP	1,430	3
Total Annual Emission from Ref MT CO ₂ eq	366,088	218
Total Annual Emission MT CO ₂ eq	3,015,512	



EXISTING PRACTICES FOR RAC e-WASTE IN PAKISTAN



EPR PRINCIPLES FOR PAKISTAN

Design Principle	Description
Materials Covered	Initially, all Domestic Refrigerators / Freezers and Domestic ACs
Obliged Companies	Producers: All Manufacturers and Importers of materials covered.
Producer's Responsibilities	<ul style="list-style-type: none"> ▪ Report manufacturing / import data, and Pay applicable EPR fee ▪ Nominate qualified personnel for PRO, and consumer awareness
Transparency & enforcement	To be ensured through data reporting and regular checks and audits.
Financial Sustainability	Initial investment may be sought from bilateral or multilateral funding.
Cooperation & Coordination	Establishment of PRO is envisaged to boost cooperation
Specificity to Local Conditions	Effort to be made to incorporate existing collection & handling system
Aim for circular economy	Initially, development of system is major target, improvement with time
Social inclusivity	Informal sector & other groups already involved in RAC waste management. The aim is not to replace them, in fact to improve their conditions



EPR ROLES & RESPONSIBILITIES FOR PAKISTAN

Stakeholder	Role & Responsibility
Producers / Obligated Companies	<ul style="list-style-type: none"> Place RAC products for sale in market. Responsible for ensuring that products are properly collected, sorted, and recycled at end-of-life. Report manufacturing / import data, as per frequency decided. Pay applicable EPR fee Nominate qualified personnel for PRO, when and if required. Play role in consumer awareness regarding e-waste, hazardous materials, proper handling / disposal, and EPR scheme.
Distributors & Retailers	<ul style="list-style-type: none"> Link between producers and consumers. Should play role in raising awareness and educating the consumers about hazardous waste and EPR.
Consumers	<ul style="list-style-type: none"> Do not dispose the RAC appliance / product improperly.
Informal Sector (Technicians / Scrap Dealers / Recyclers, etc.)	<ul style="list-style-type: none"> Collection, dismantling, and recycling of the RAC waste. recovery of refrigerant, proper handling & disposal of waste not recycled. Keep constant liaison with PRO & other stakeholders and inform about issues faced, if any.



EPR ROLES & RESPONSIBILITIES FOR PAKISTAN

Stakeholder	Role & Responsibility
Government (Federal & Provincial)	<ul style="list-style-type: none">▪ Most pertinent is Ministry of Climate Change & Environmental Coordination (MOCC&EC), assisted by provincial Environment Protection Agencies.▪ Responsible for legislation and development of regulations.▪ Oversight of the activities and provide support, where required▪ Monitoring of the overall activities of PRO and other stakeholders.▪ Participation in PRO, if required.▪ Public awareness campaigns.▪ Discourage free riders
Producer Responsibility Organization(s) (PRO)	<ul style="list-style-type: none">▪ Ensure environmentally sound management of RAC waste.▪ Ensure registration of all producers, discourage and identify potential free riders▪ Collection of funds from obliged companies and management of these funds▪ Disbursement of funds, assistance in recycling and/or disposal of materials▪ Make sure technicians / dismantlers are equipped with proper tools and equipment and that refrigerant is not released into the air.▪ Maintain records & documentation, perform analysis & report to stakeholders.▪ Public awareness campaigns.



EPR STRUCTURE FOR PAKISTAN

Recommended PRO Structure for RAC Sector in Pakistan:

- **Non-Profit**
- **Collective PRO**
- **Composition: Mainly Private Sector with Government oversight**
 - Members from different obliged companies,
 - Government, oversight role
 - Pakistan Electronics Manufacturers Association (PEMA)
 - HVACR Society, and All Pakistan HVAC Welfare Association,
 - Scrap / Recyclers
 - Distributors / Retailers
 - Private Third-Party Advisor(s), NGO working on Environmental Protection



PAKISTAN FURTHER ACTIVITIES

Pakistan is gradually embracing Extended Producer Responsibility (EPR):

- Pakistan's National action roadmap to reduce plastic pollution (December 2024) incorporate Extended Producer Responsibility (EPR).
- Recent updates to Pakistan's National Hazardous Waste Management Policy, 2022 integrates EPR as well.
- National Ozone Unit (NOU) participated in workshop and later held meetings with relevant government stakeholders to discuss idea of EPR.
- Consultant briefed NOU and National Basel Convention Focal person on relevant activities in neighboring countries
- NEECA has notified Pakistan Energy Label Regulation 2023 for different appliances including **Room Air Conditioners**, and **Household Refrigerating Appliances**. Under this regulation, each producer (manufacturer and importer) **has to register products** intended to be placed for sale in market in Pakistan.
- EPR for batteries drafted and planned to be introduced.



THANK YOU

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Thank you!

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