

CLOSING THE LOOP: EXTENDED PRODUCER RESPONSIBILITY SYSTEM IN THE REPUBLIC OF KOREA

Circular Economy Forum

17 June 2025 (Tuesday) 13:30 – 15:00

Presentation Outline

01.

Introduction to EPR

This section introduces the concept and evolution of Korea's EPR policy, outlines the range of items.

02.

EPR Ecosystem

This part explains the roles of key stakeholders, describes the compliance and monitoring processes, and online reporting system

03

Fees and Implementation

It details how mandatory recycling rates and volumes are set, how contribution fees and penalties are structured, and outlines the annual implementation cycle.

04

Key Enablers

The final section focuses on the institutional frameworks, the role of public-private partnerships, the integration of informal sector workers, and public awareness efforts.



EPR

Extended Producer Responsibility

Korea introduced the EPR scheme in 2003, requiring producers to take responsibility for entire life cycle of products, such as collection, disposal, and recycling after use.

Responsibility	Manufacturing	Sales	Consumption	Collection	Transport	Recycling
Without EPR						
With EPR						

Response to Economic and Waste Growth

Economic Growth

The Republic of Korea achieved an average annual GDP growth rate of 9% from the 1980s through the 1990s. During this period, the share of the urban population increased from 55% to over 70%.

Waste Volume

Daily waste generation increased from 67,031 tons in 1987 to 92,246 tons in 1991. Plastic waste alone tripled in the 1990s compared to the previous decade.

Waste Composition

Combustible waste dropped from 53% in 1990 to 25% in 2000, while incombustible waste rose from 47% to 75%, reflecting increasing complexity in waste streams.



Polluter Pays Principle



Response to Economic and Waste Growth

Since 1995, the **volume-based waste fee system** has been widely available to facilitate proper waste disposal. This system is applicable to both at domestic and industry.

Consumers can easily purchase the desired size of **Volume-based Waste Bag** at convenience stores, grocery stores, and other designated locations. Weight-based containers are also installed. These containers use **Radio Frequency Identification (RFID) technology** to measure the weight of the waste disposed of, and fees are charged accordingly.

For food wastes, municipalities provide specific collection methods using **food waste-only bins or special waste bags**. These are collected by waste haulers either daily or every other day, depending on the municipality’s capabilities

For oversized waste items, such as home appliances and furniture, consumers should purchase **designated stickers** to be pasted on the item.

Complementing the VBWF system, the **Extended Producer Responsibility (EPR) system** targets specific waste streams, like tires, lubricants, batteries, and electronic equipment, which are not managed by the VBWF.

	Volume-based Waste bag	RFID Weight Method	Chip/Sticker (Container)
Unit	Volume size	Weight	Volume size
Payment	Prepaid payment	Deferred payment	Prepaid payment
Discharge Methods	Standard biodegradable bags (1,2,3,5,10 and 20 liters and above)	Large container with RFID weight system (food-waste)	Standard container with a chip
Fees	Household	Household	Community-based charging system
Images			

What Items Are Covered Under EPR?

- Initially, the EPR items were only 11 product categories and 4 types of packaging materials.
- Over time, the scope expanded to include **24 product types and 4 types of packaging materials**.
- The full list of covered items is publicly available on the Ministry of Environment's website and other related government platform.

Products (24 types)



Packaging Materials (4 types)



Who Qualifies as a Responsible Producer?

Products

- All manufacturers and importers of 24 product types are subject to EPR obligations. No exemptions apply, regardless of volume.

Packaging Materials

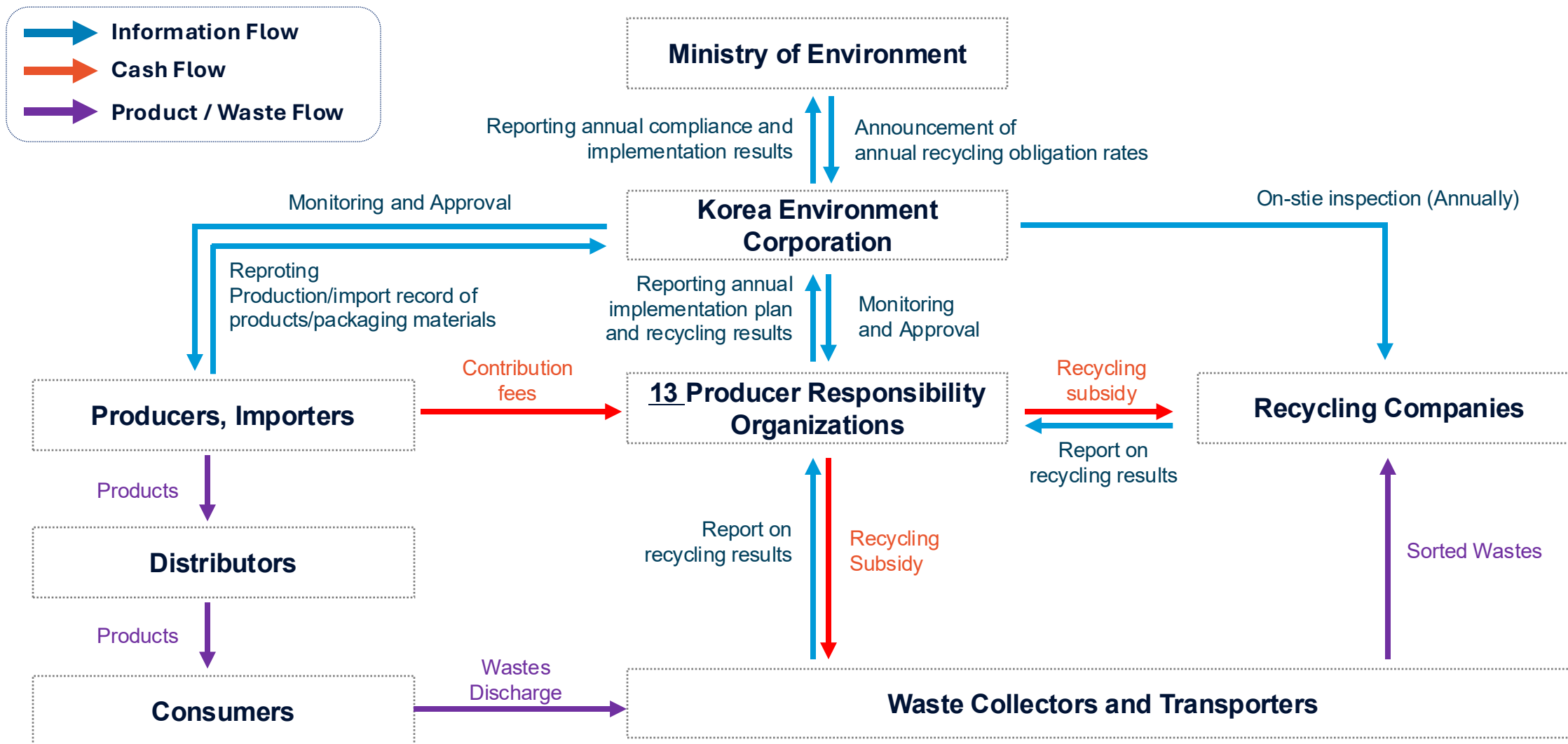
- Manufacturers and importers of the 4 packaging materials, except those exempted under the minimum threshold criteria as below:

		Paper, Metal can, Plastic	Synthetic Resin	Glass Bottles
Manufacturers	Sales Revenue	KRW 1 Billion	KRW 1 Billion	KRW 1 Billion
	Production Volume	4 Tons	0.8 Tons	10 Tons
Importers	Import Value	KRW 300 Million	KRW 300 Million	KRW 300 Million
	Imported Volume	1 Tons	0.3 Tons	3 Tons

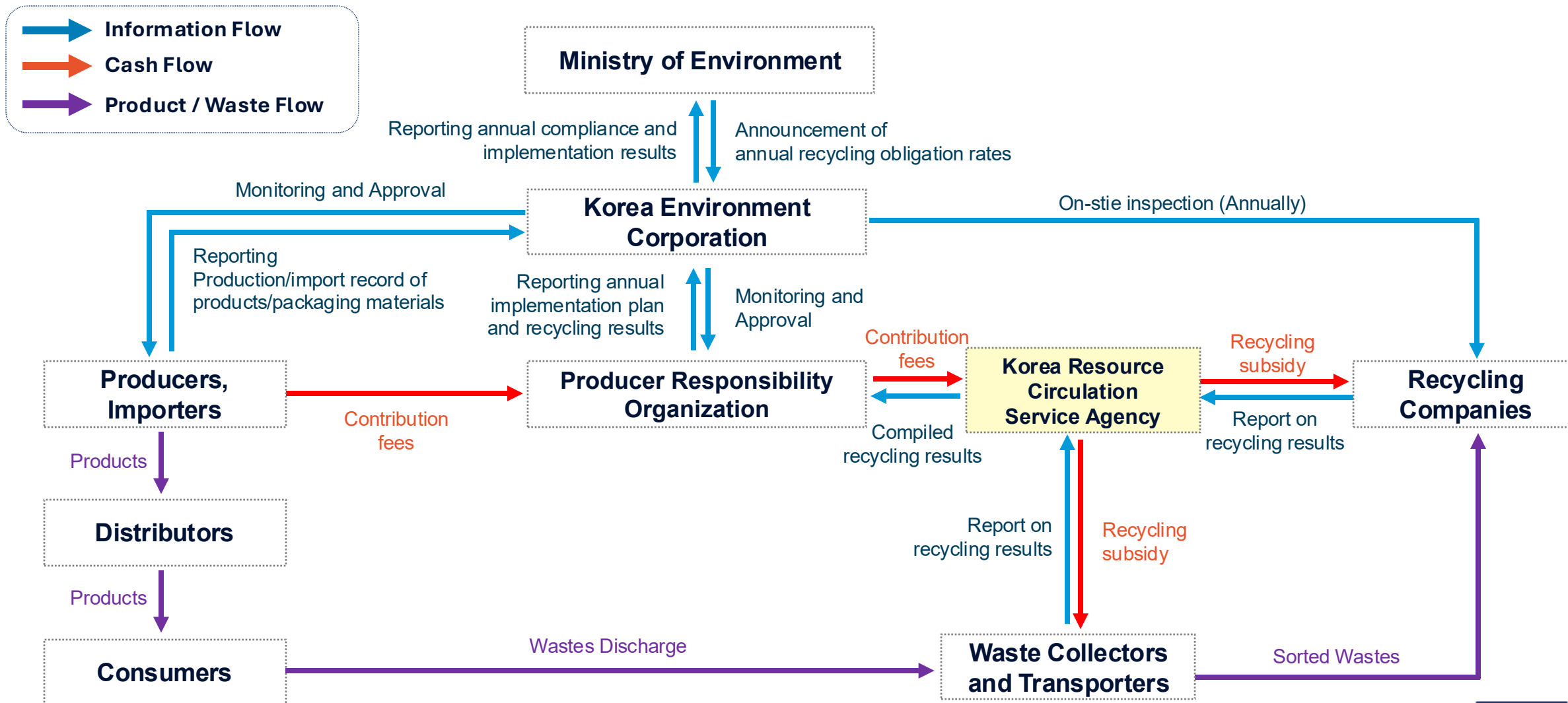
Who are Major Stakeholders?

Major Stakeholders	Roles
Ministry of Environment (MoE)	<ul style="list-style-type: none"> The Resource Recycling Division under the Bureau of Resource Circulation oversee the operation of the EPR system. Responsible for enacting laws, regulations, and guidelines; and announce recycling obligation rates for each item annually based on quantity produced, quantity previously recycled, market trends, and national recycling capacity. Impose fines on responsible producers for non-compliance with the EPR standards.
Korea Environment Corporation (K-eco)	<ul style="list-style-type: none"> The Bureau of Resource Circulation and 8 regional offices support EPR implementation nationwide (approx. 100 staffs) Public entity under the Ministry of Environment. Review and approve obligation fulfillment plans and reports submitted by producers or Producer Responsibility Organizations (PROs). Assess and verify sales and import records of producers and recycling performance of recycling agencies. Conduct EPR performance inspections and impose recycling charges (penalties) where applicable.
Local Government	<ul style="list-style-type: none"> Facilitate the collection and treatment of wastes within districts.
Producer	<ul style="list-style-type: none"> Fulfill recycling obligations either individually or by joining a PRO. Pay contribution fees, if joined a PRO, to manage the end-of-life of their products.
Producer Responsibility Organizations (PROs)	<ul style="list-style-type: none"> Private Non-profit organization that implements EPR obligation on behalf of responsible producers. 14 PROs in total—13 for products and one for packaging materials. The establishment, approval process, and operation of PROs are regulated under the Act on the Promotion of Saving and Recycling of Resources. Prepare EPR implementation plans and recycling compliance reports, then submit to K-eco. Manage the execution of contribution fees (paid by producers).
Korea Resource Circulation Service Agency (KORA)	<ul style="list-style-type: none"> Public agency that acts on behalf of packaging material producers to fulfill their legal obligation for the collection and recycling of packaging materials since 2013. The KORA coordinates cash flow and reporting process between PROs and Recyclers with PRO.
Recycling Companies	<ul style="list-style-type: none"> Collect and recycle waste, through contracts with either public or private entities. Receive funds from EPR schemes for handling wastes, based on verified recycling results.
Consumers	<ul style="list-style-type: none"> Properly separate and dispose products and packaging materials after use.

How Does the EPR System Function? (Products)



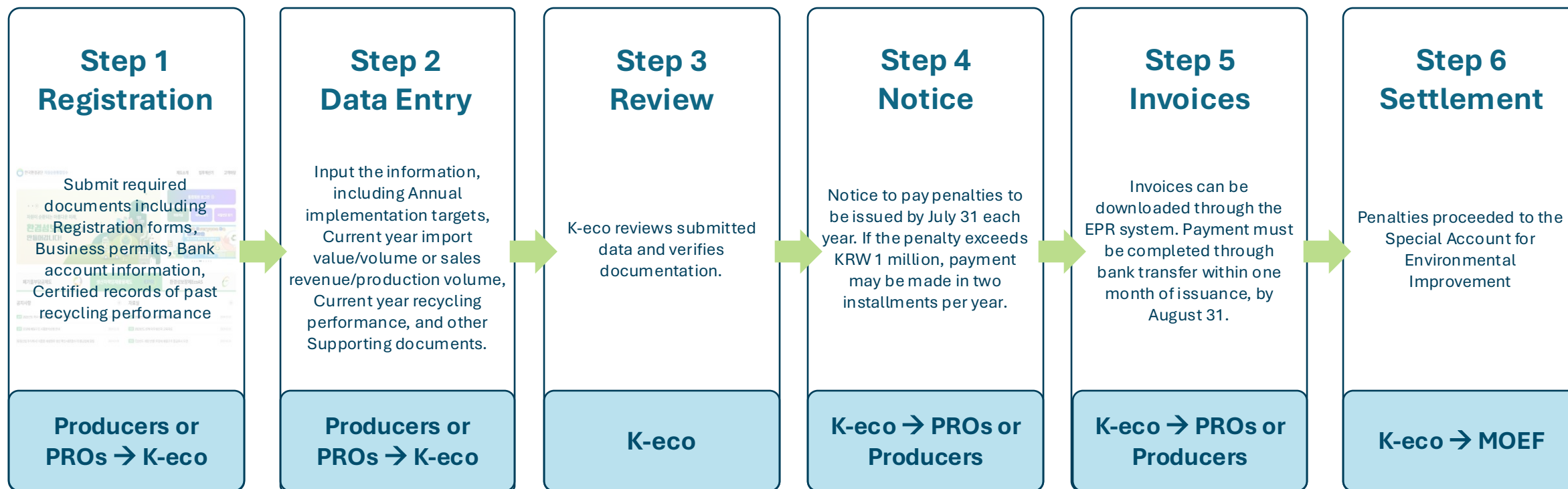
How Does the EPR System Function? (Packaging Materials)



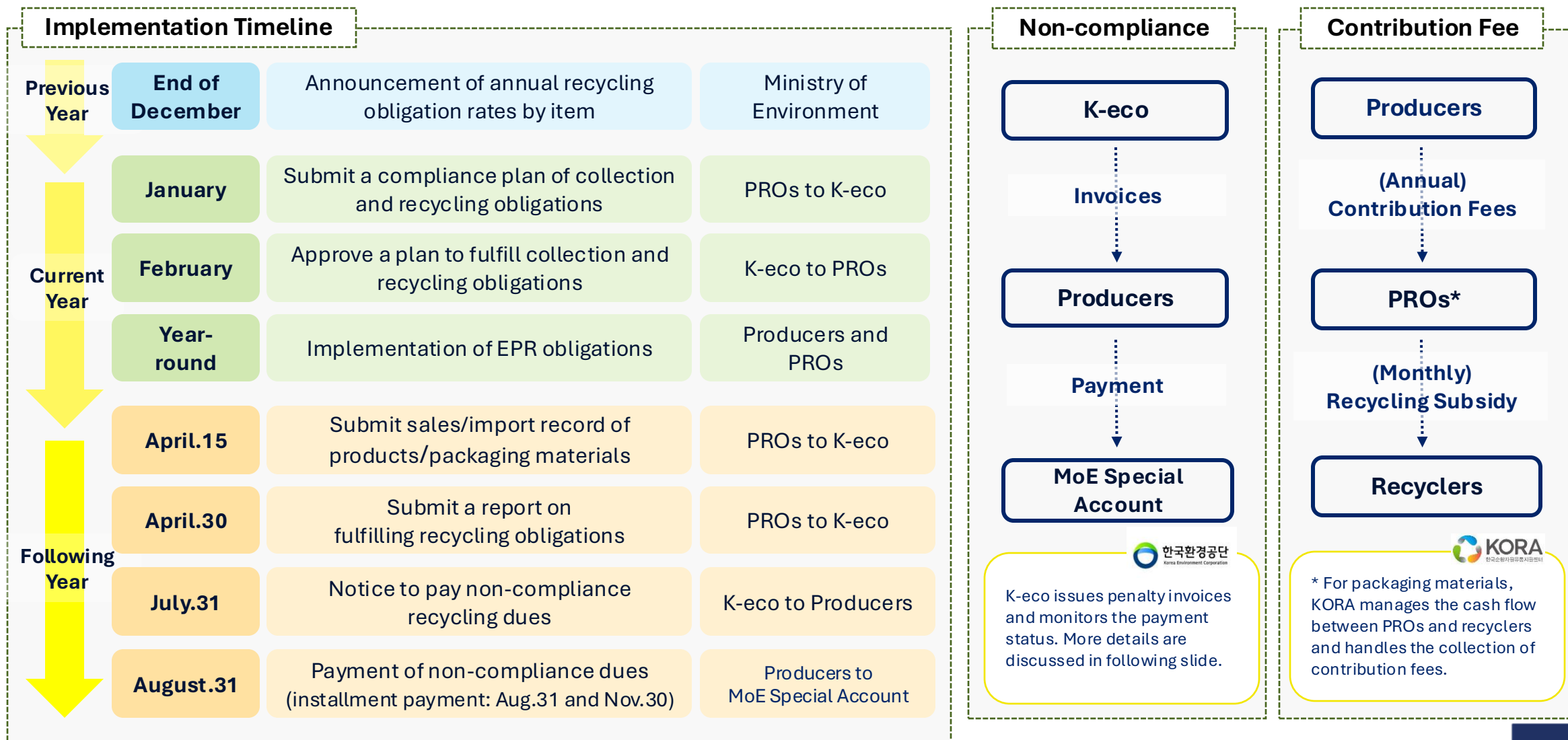
Digitalizing EPR System

The Ministry of Environment has launched a **Korea Resource Circulation Compliance System**, a comprehensive reporting and verification online system with the launch of the EPR scheme.

This system is operated by the K-eco and designed to allow responsible producers, PROs, and voluntary EPR participants to submit compliance plans, report performance data, and receive penalty notices.



EPR Implementation Timeline



Fee Calculation (1)



Recycling Rates

- Every five years, the Ministry of Environment establishes long-term recycling targets and annually announces recycling obligations rates for responsible producers.
- These rates are set within a maximum limit of 0.9, based on various factors influencing recycling rates, including trade conditions, recycling infrastructure capabilities, recycling technology level, product life span, and environmental goals (see Mandatory Recycling Rate).

Mandatory Volume

Calculation Basis

**Mandatory
Recycling Rates**

X

Product / Packaging Volume in Compliance Year

Mandatory Recycling Rates

Items	2022	2025
Paper pack	0.268	0.146~0.293
Glass bottle	0.717	0.758
Metal can	0.807~0.843	0.813~0.872
Synthetic resin	0.385~0.859	0.434~0.900
Batteries	0.153~0.600	0.169~0.600
Tires	0.800	0.800
Lubricants	0.760	0.769
Fluorescent lamps	0.950	0.969
Floor materials	-	0.220
Film products	0.859	0.900
LED lighting	-	0.125~134
Aquaculture floats	0.154	0.115
Silage wrap film	0.511	0.645
Synthetic resin seaweed drying frames	0.848	0.810
Industrial films	0.550	0.652

Items	2022	2025
Water purifier filters for replacement	0.710	0.801
Safety nets	-	0.400
Fishing nets	-	0.420
Ropes	-	0.238
Polyethylene pipes	-	0.105
PVC products	-	0.102
PP-based household goods	-	0.549
Pallets	-	0.156
Plastic transport boxes	-	0.207
Window/Door frames	-	0.160
Insulation materials for construction	-	0.097
Power and communication lines	-	0.188
Automotive maintenance parts	-	0.517

Fee Calculation (2)

Contributions

- Paid by responsible producers to PROs to fulfill their recycling obligations.
- Producers pay contribution fees to PROs on annual basis, and PROs pay recycling subsidies to recyclers on monthly basis.
- Payment is made during the reporting year, based on estimated volumes from the previous year's production or import volume.
- **Production or Import Volume (kg) x Mandatory Recycling Rate x Unit Price per Item (KRW/kg)**

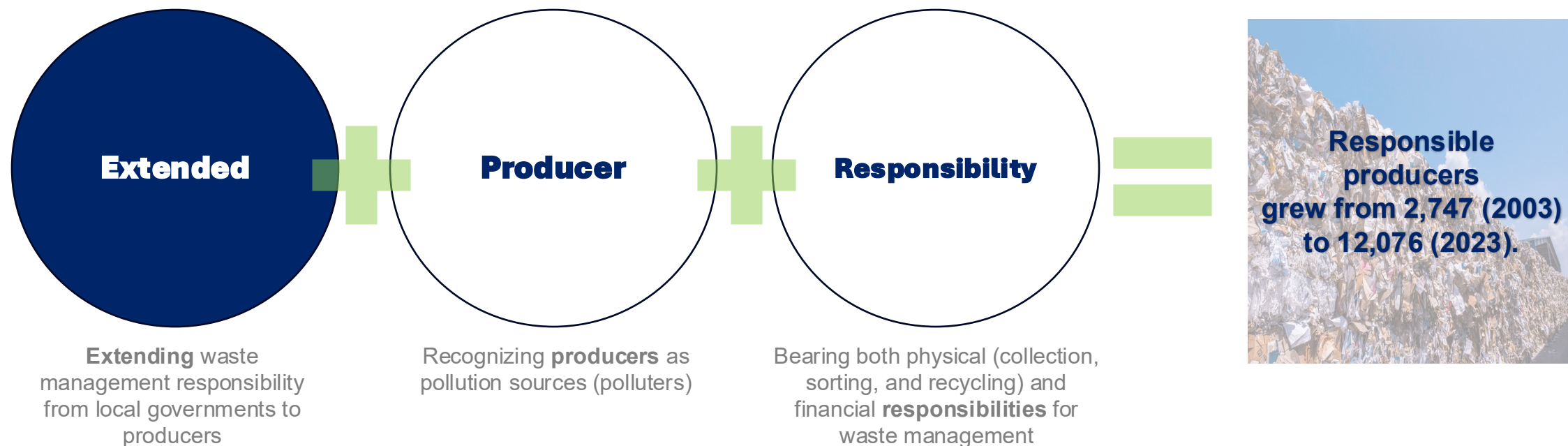
Penalties

- Non-compliance penalties imposed on responsible producers for failure to meet recycling obligations.
- Notified and collected by K-eco in July every year. Penalties are subject to special account of the Ministry of Environment.
- Penalty rate is capped at 130% of the standard recycling cost.
- **Non-compliance Volume x Standard Recycling Cost x Recycling Cost Adjustment Index x (1+Non-compliance rate)**

Incentives

- If a producer recycles more than the required amount, the records on extra recycling can be saved and used for the next two years to meet future targets. The calculation is based on the records achieved from the previous year.
- This system helps reduce risks for producers by providing flexibility in case of economic changes.
- **Production or Import Volume x Mandatory Recycling Rate x Recycling Cost Per Item x Incentive Rate**

Outcome



EPR scheme has resulted in cumulative landfill cost savings of KRW 7.1 trillion (Approx. USD 4.9 billion), the creation of up to 22,000 jobs, and an estimated reduction of 11.19 million tons of Co2 emissions.

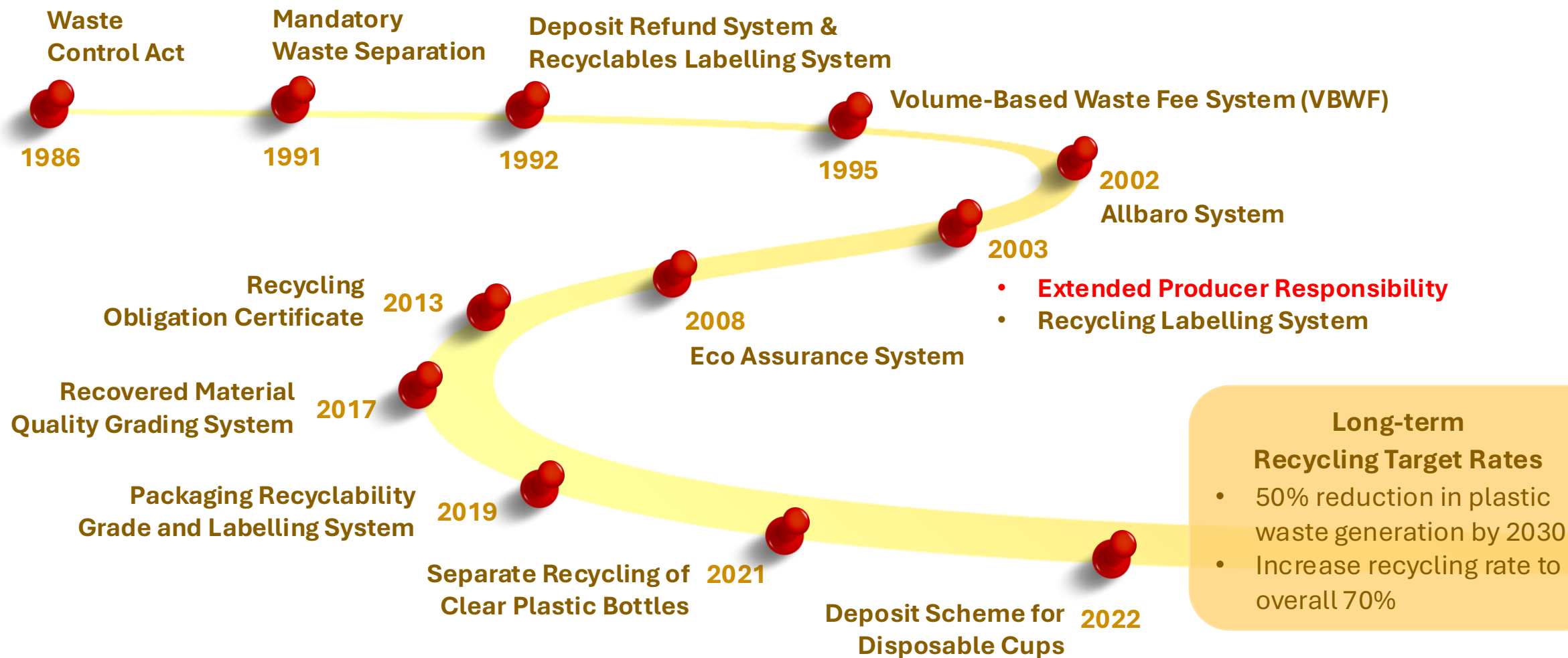
Recycling rates for products and packaging materials achieved 87%.

Packaging materials met 100% compliance in 2023.

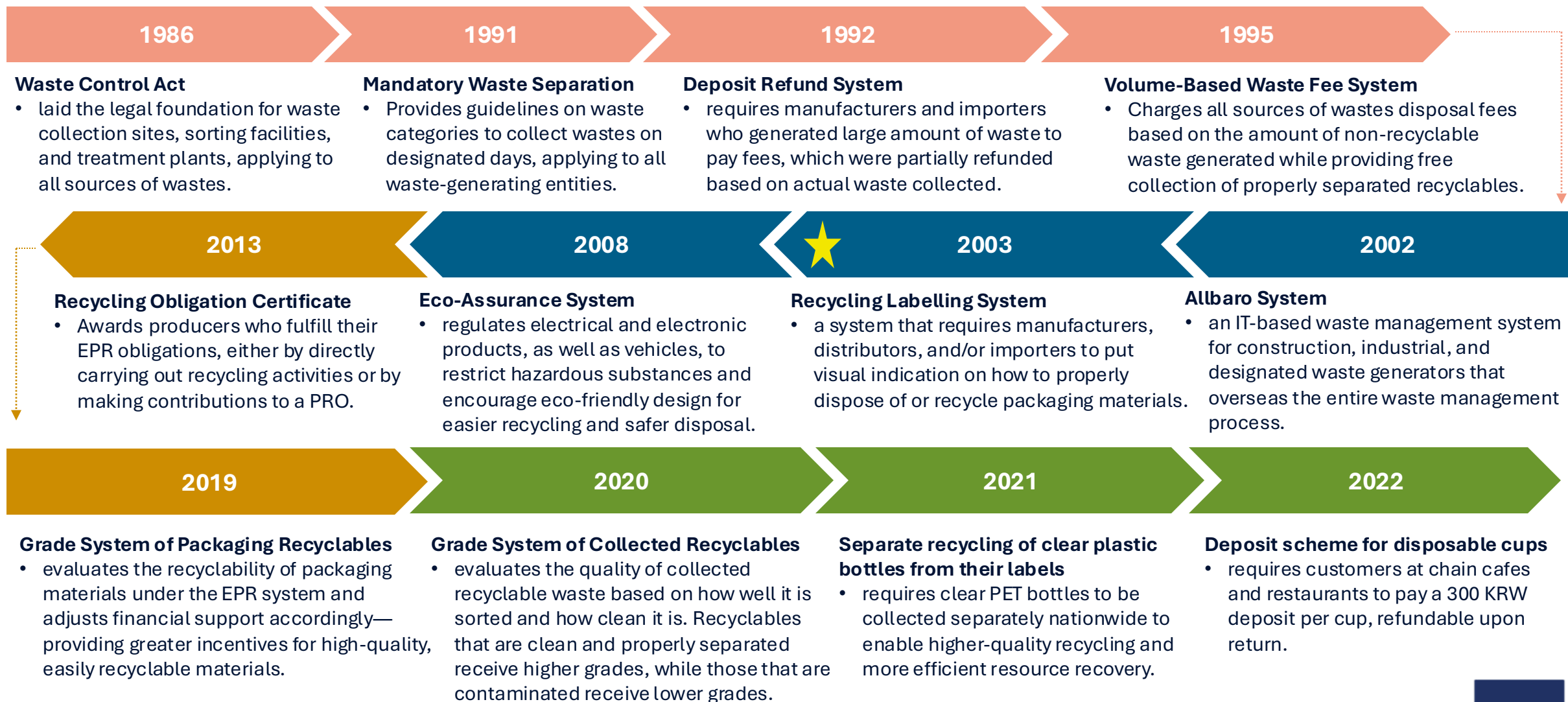
Recycling industry revenue grew from KRW 2 trillion in 2002 to KRW 20 trillion 2023.

The number of recycling businesses expanded from 3,009 to 7,221.

Key Enablers: Institutional Frameworks



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Key Enablers: Public-Private Partnership

Ministry of Environment, K-eco, Producers, and Recycling Agencies

- MoE develops policies, legal frameworks, and recycling targets.
- K-eco monitors recycling performance reported by producers and recycling agencies through an online system.
- K-eco verifies final recycling data and gives subsidies (primarily paid by producers) to recycling agencies.
- K-eco conducts audits on producers and recycling agencies to ensure proper subsidy management.

Producers, PROs, and Recycling Agencies

- Producers pay contribution fees to PROs, covering waste collection, treatment, and administrative costs, including PRO operations.
- Fees are calculated based on each producer's recycling obligation, proportional to its market share. EPR funding is not government-funded.
- The majority (70-90%) goes to recyclers, while 1-5% supports public awareness and education campaigns.

Ministry of Environment, K-eco, and Producers

- If a producer or PRO fails to meet recycling obligations, the Ministry of Environment (MoE) imposes a penalty covering the unmet recycling costs plus a surcharge of up to 30%.
- Producers exceeding targets can carry forward surplus recycling performance for up to two years.
- Manufacturers/importers achieving the highest recycling grade receive a refund of up to 50% of contribution fees paid to PROs (for PET bottles).

Local Governments and Recycling Agencies

- Local governments provide low-interest loan programs for recycling agencies, offering region-specific favorable loan terms. (e.g., 0% interest in Seoul, with a maximum 3-year grace period and 5-year repayment).
- In terms of business operation, 97% of the waste treatment businesses are privately operated, managing over 90% of waste from construction and industrial sites. This share includes facilities operating under contracts with local governments.

Key Enablers: Informal Sector Integration



Safety Measures

- Distribute lightweight carts and safety gear.
- Support enrollment in accident/injury insurance.
- Conduct safety and health training sessions.

Employment

- Identify informal workers through local recyclable collection shops.
- Refer them to Public Job Support Centers for counselling and job placement.
- Connect individuals to stable employment via public-private-NGO partnerships. For those continuing waste collection, link them to formal recycling enterprises under local government oversight

Care Services

- Conduct weekly home visits by local welfare centers to provide one-on-one health and mental care services.
- Offer bi-monthly health checkups and consultations by public health nurses at community centers.

Livelihood & Housing

- Register eligible individuals as emergency welfare recipients for living and housing support.
- Partner with social enterprises to purchase recyclables at prices slightly above market rates.

Key Enablers: Public Awareness



Availability of Segregation Infrastructure

Accessible Bins
Volume-Based Waste Bags
RFID-Tagged Bins



Public Awareness Campaigns

Social Media and Influencers
School Programs



Publication

Annual Report and White Paper
EPR Performance Results
Statistics



Economic Incentives

Eco-points & Reward System
Single-use Cup Deposit System



EPR Status at Glance

	No EPR	Voluntary EPR	Emerging legislation	EPR Framework passed	Mandatory EPR
Republic of Korea					
Australia					
Brunei Darussalam					
Canada					
China					
Indonesia					
Japan					
Malaysia					
New Zealand					
Papua New Guinea					
Philippines					
Singapore					
Thailand					
United Staes					
Viet Nam					

Source: *The Role of Extended Producer Responsibility Schemes for Packaging towards Circular Economies in APEC* (The World Bank, 2022), *Extended Producer Responsibility for Plastics and Packaging* (ERIA, 2025)

Takeaways

What has the government learned about its implementation that other governments may benefit from?

Phased Approach

- Korea took a gradual, adaptive approach, starting with four packaging materials and 11 products in 2003 and expanding to 28 items today.
- This **phased expansion** allowed time to develop infrastructure, refine legal frameworks, and build capacity across stakeholders.

Market-based Mechanism

- The system employs a **market-based mechanism** where producers pay fees proportional to their market share and recycling obligations.
- Recycling subsidies and fee adjustments based on performance created a cost-effective, performance-driven model.

Performance-based Governance

- Compliance is enforced through **target-based regulation** and regular audits. Data reporting is digitized and managed by a public body, ensuring transparency

Waste Sorting and Collecting

- Implementation success was enabled by household-level waste separation infrastructure, like **volume-based waste bags**.
- Rather than only focusing on back-end recycling, the system encourages consumer-driven sorting to enhance upstream waste quality.

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