Jeju Plus International
Environmental Forum
2024. 09.26~27

For carbon neutrality and circular economy

Global Plastic Treaty and International cooperation

Chungnam National University Prof. Yong-Chul Jang

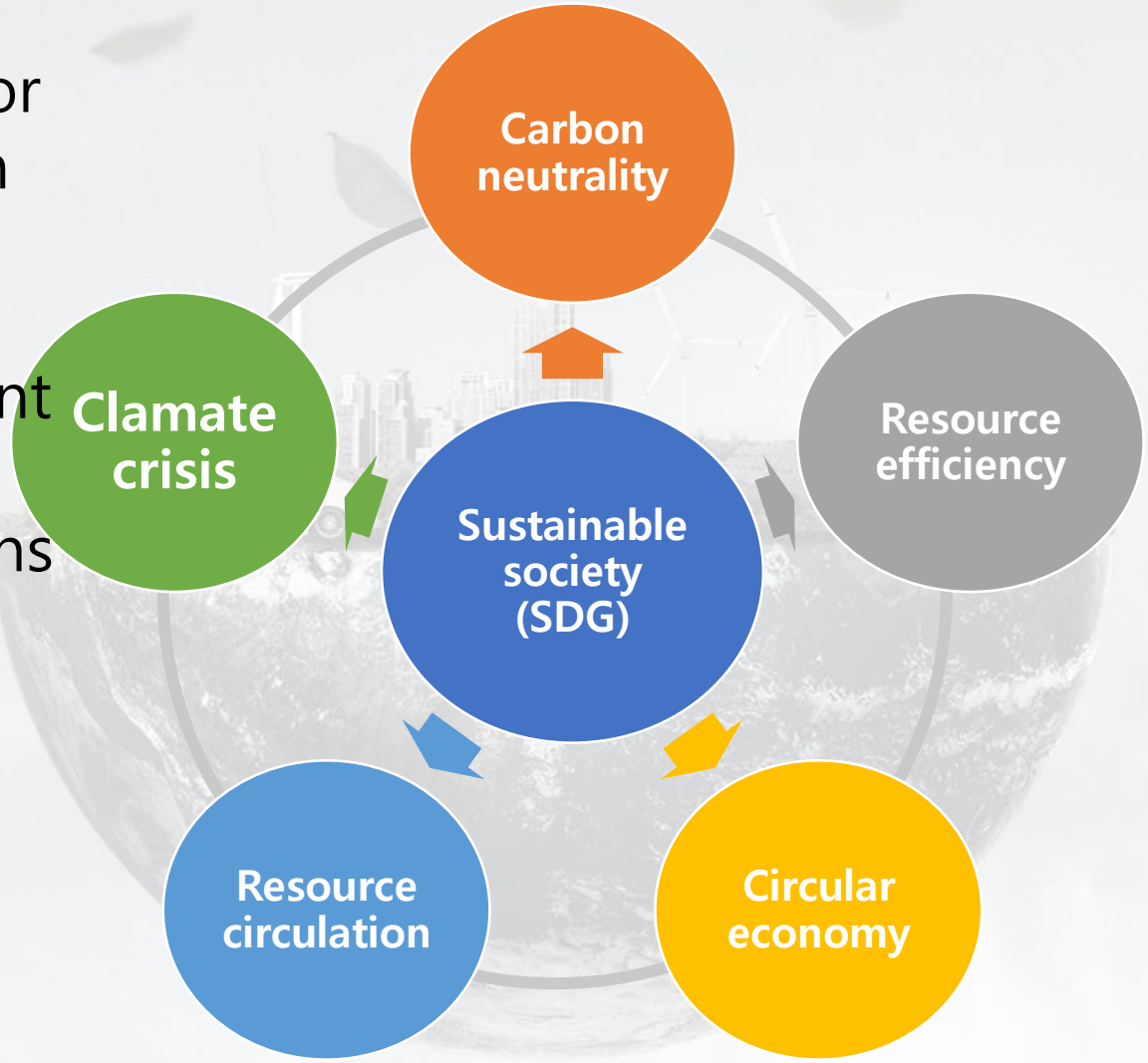
Overview

1. Plastic pollution and impacts
2. Issues and agenda of global plastic treaty
3. International cooperation
4. Summary and conclusion

Before presentation

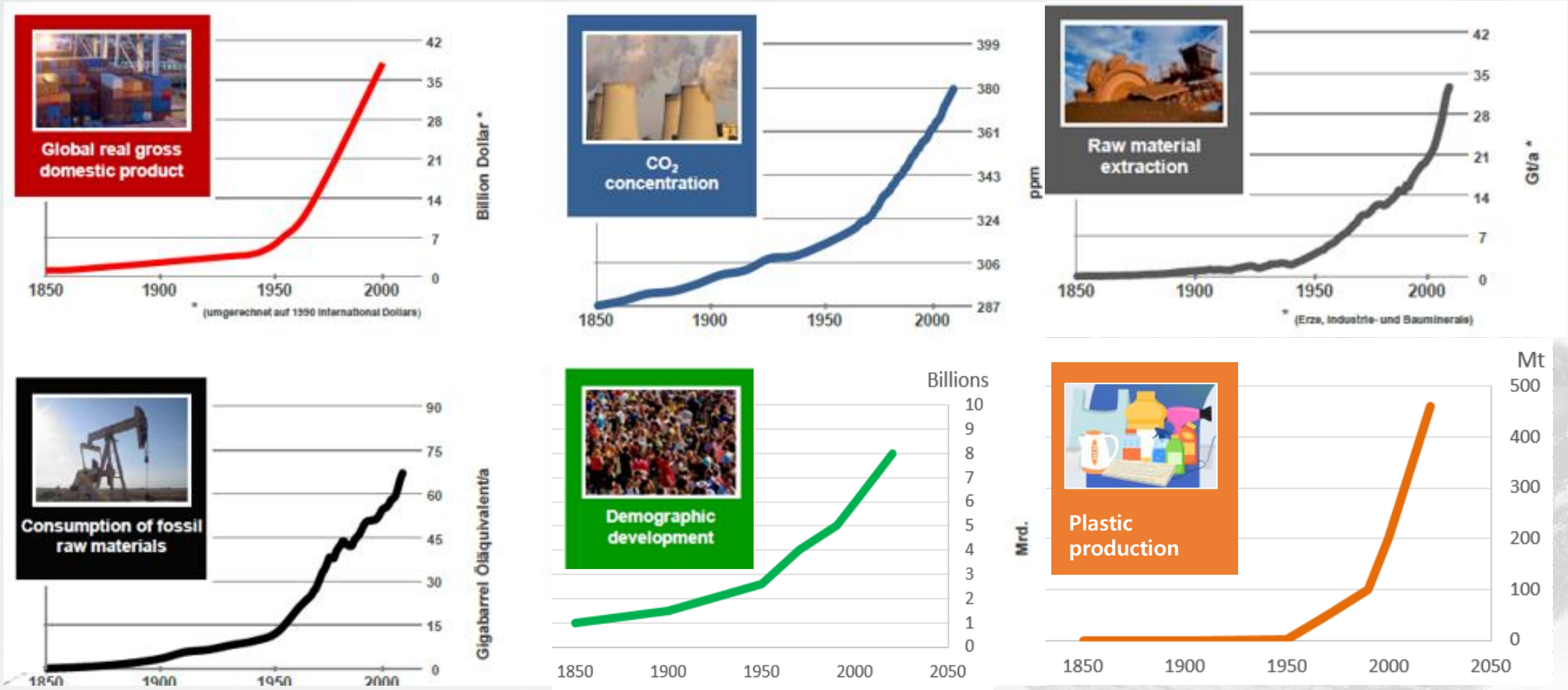
(1) Main key questions?

① Why is a circular economy important for reducing the impact of plastic pollution and achieving carbon neutrality ?
② What are the agenda, issues, and prospects of the international agreement on plastics?
③ What are international cooperation plans and cases for a circular economy for plastics?



1. Impact and outlook of plastic pollution

(1) Global trends: population, greenhouse gases, resource consumption, plastic production

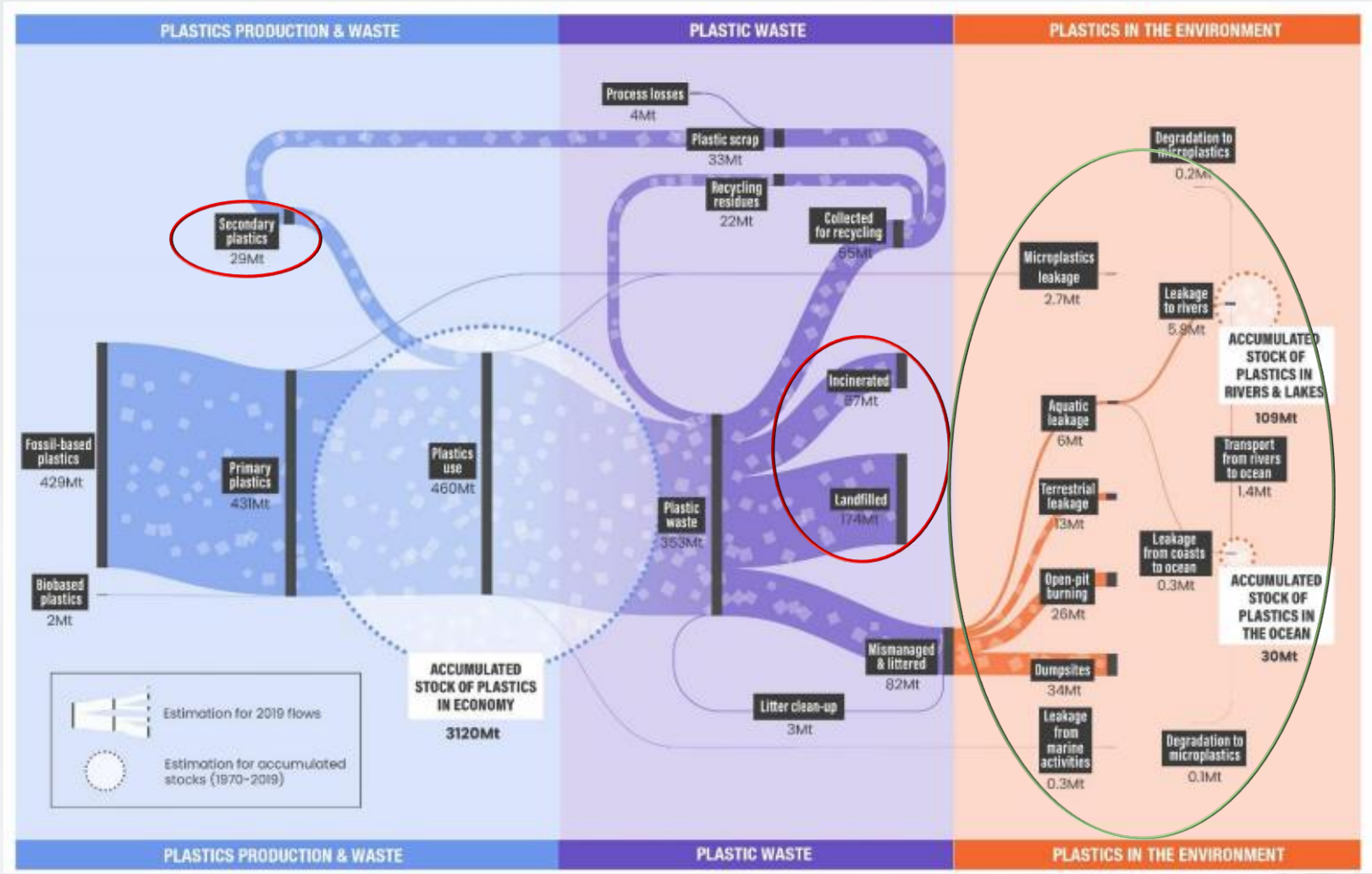


[Figure] Trends in the growth of world population, resource consumption, fossil fuels, and plastic production (1985–2020) (1985–2020)

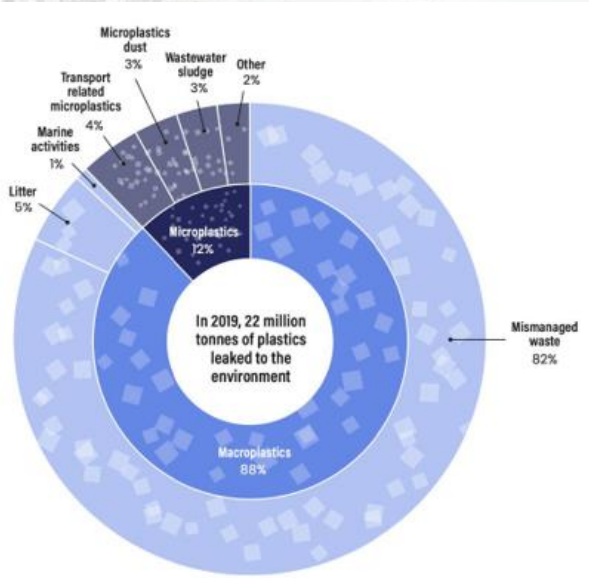
(Source: Faulstich, 2013; Statistica, 2023)

1. Impact and outlook of plastic pollution

(2) Global plastic flow and linear economy제



- In 2019, 460 million tons were consumed, and about 350 million tons of waste was generated after use.
- Much of plastic waste were landfilled or incinerated (77%).
- The amount recycled after collection is only 29 million tons

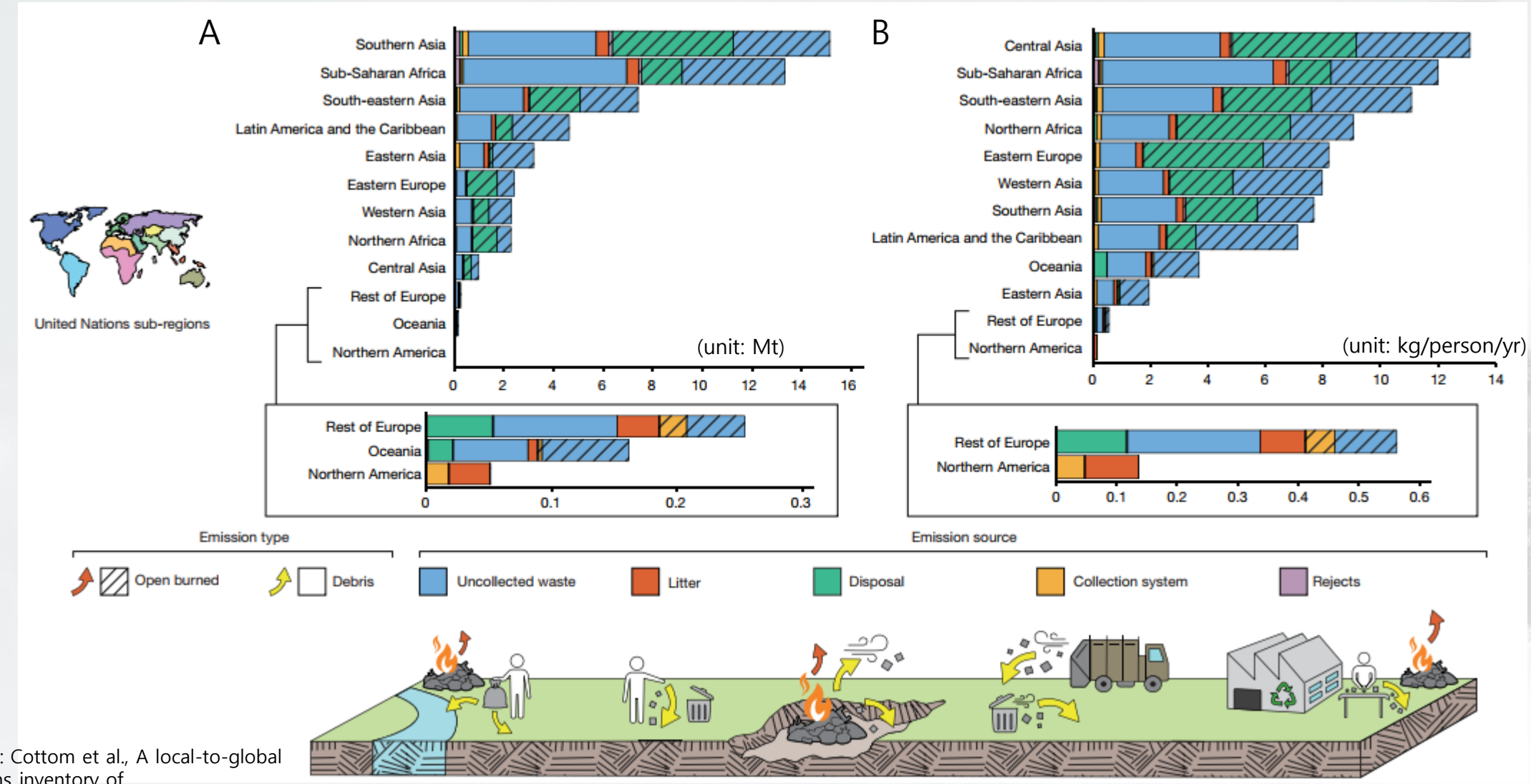


[Fig] Global plastic material flow diagram(2019)

(Source : OECD, Global plastic outlook, 2022)

1. Impact and outlook of plastic pollution

(2) Global Plastic Flow and Environmental Emissions: Increasing Plastic Pollution in Asia & Africa

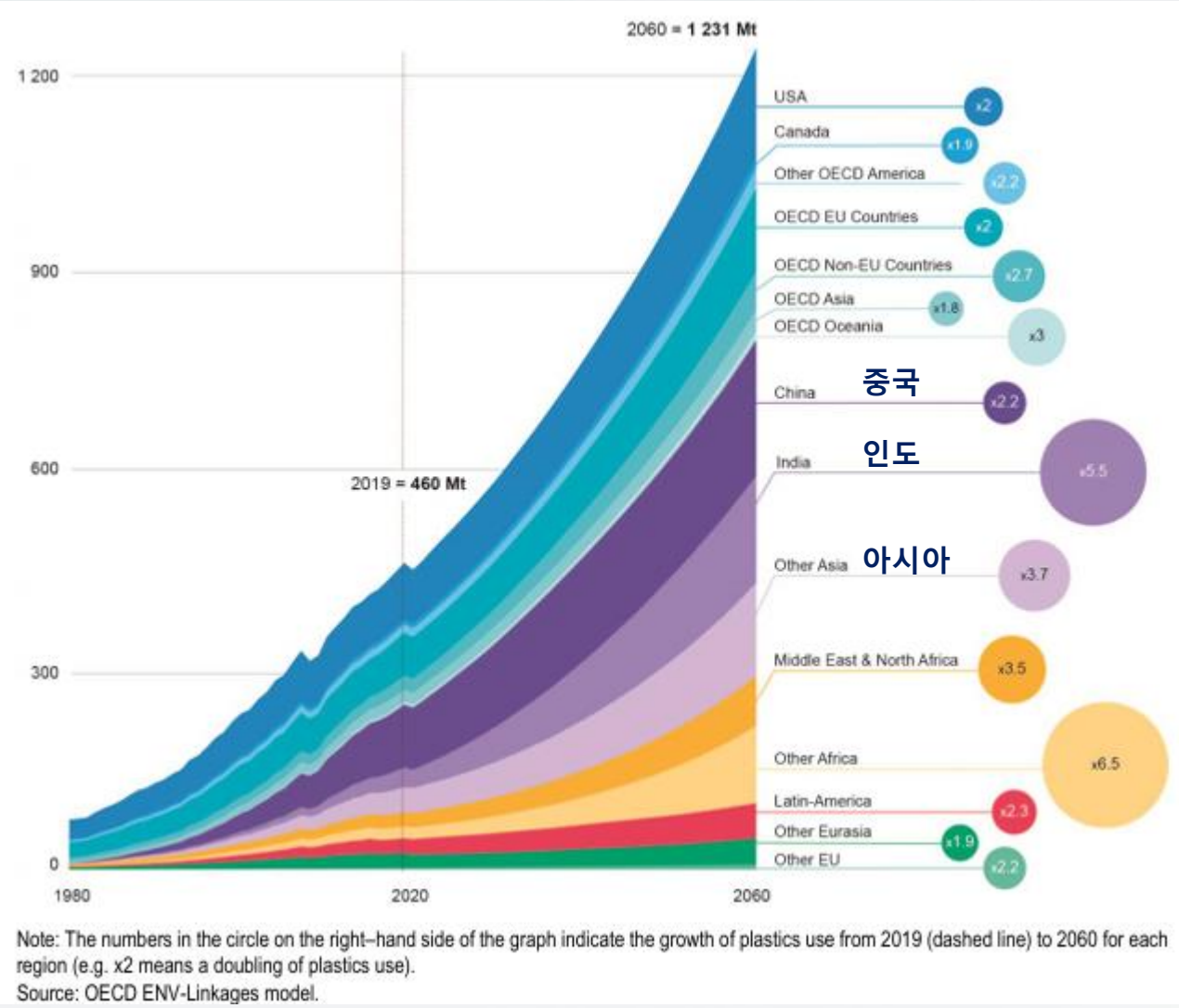


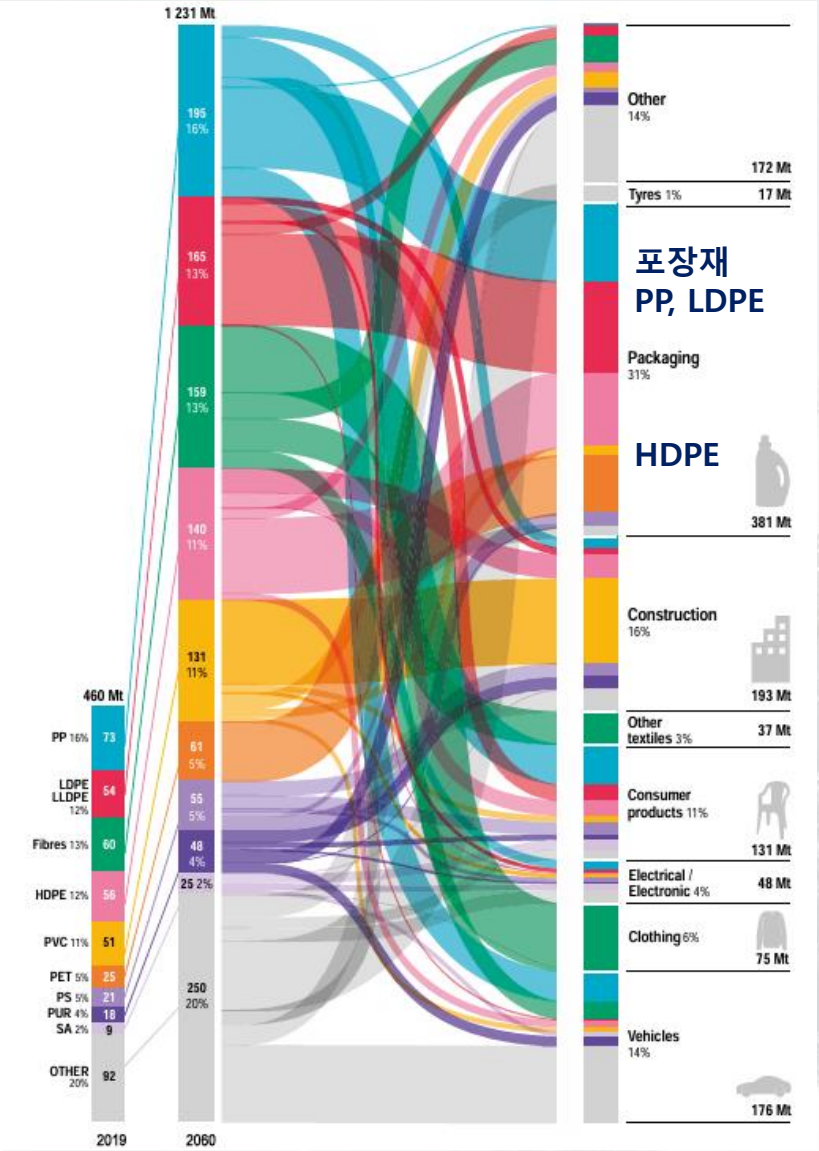
(Source : Cottom et al., A local-to-global emissions inventory of macroplastic pollution, Nature, 2024)

[Fig] Environmental emissions of global plastic waste (2020)(2020)

1. Impact and outlook of plastic pollution

(2) Global plastic production forecast (2060)





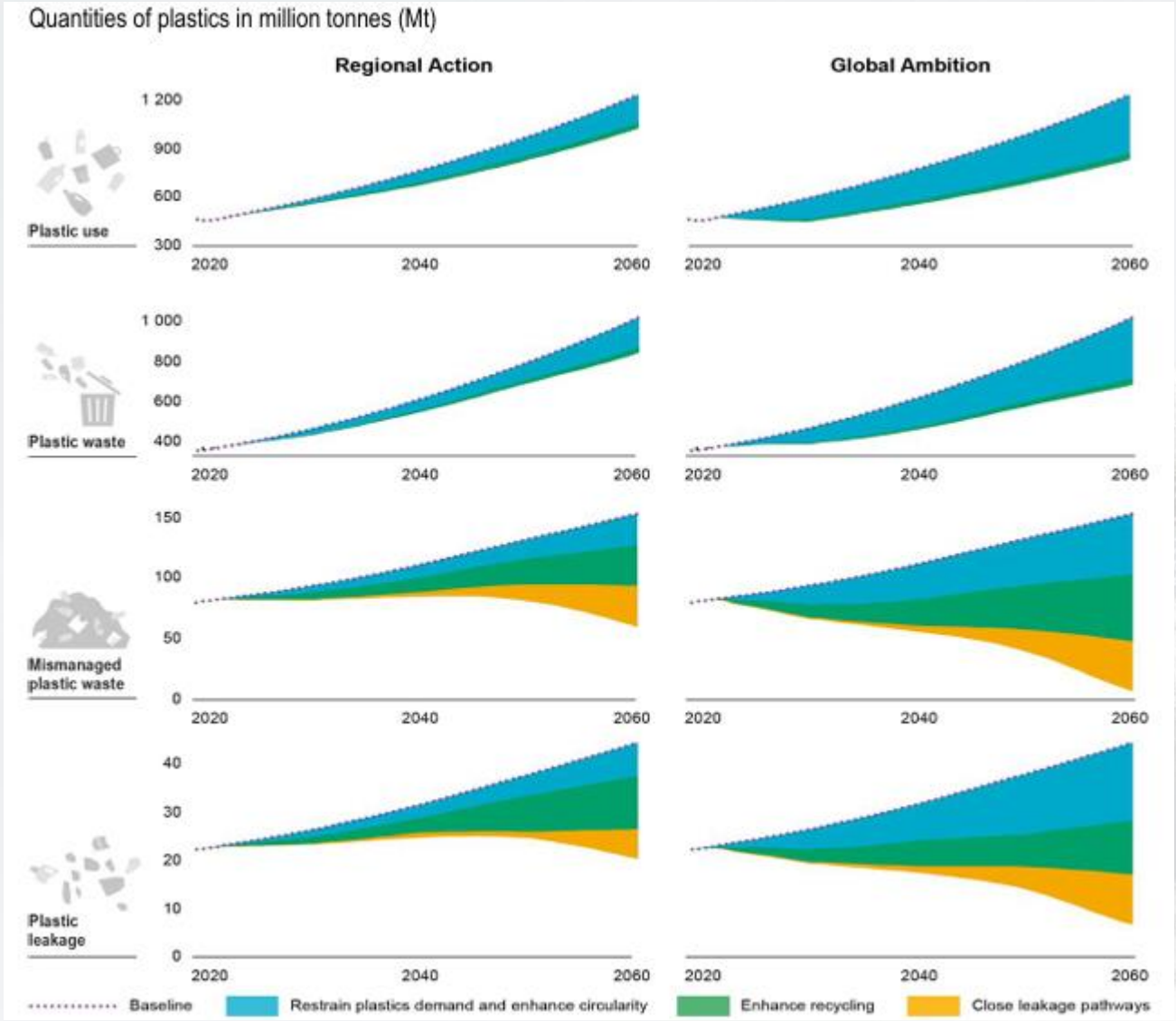
- Production and consumption in 2060 is expected to be approximately 1.23 billion tons (3 times increase) compared to 2019 (460 million tons)
- Global regulation needed as production and consumption surge
- The amount of water environment discharge is also expected to increase due to improper management and non-collection.

[Fig] Projected global plastic production(2060)

(Source : OECD, Global plastic outlook, 2022)

1. Impact and outlook of plastic pollution

(2) Global plastic production forecast (2060)



- Production and consumption are expected to increase to approximately 1.23 billion tons in 2060 (3 times increase) compared to 2019 (460 million tons)
- Strong measures are needed to end plastic pollution due to environmental leakage of plastic waste and increased greenhouse gas

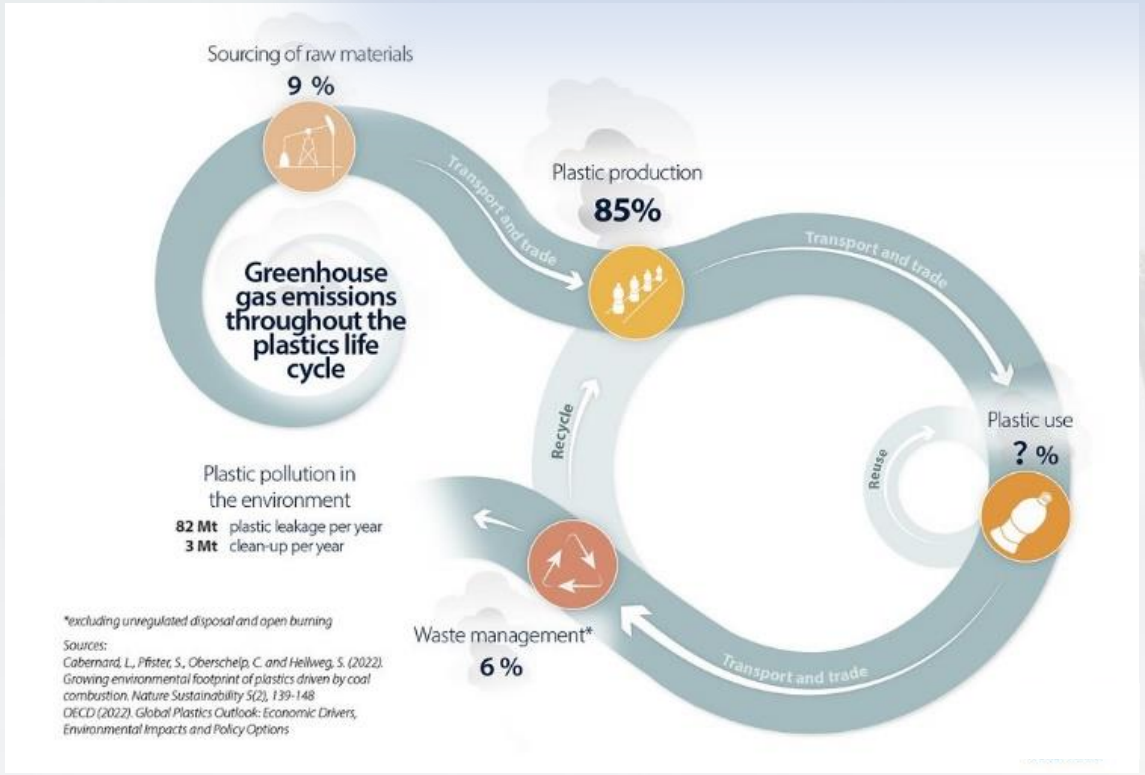
(Source : OECD, ENV-Linkages model)

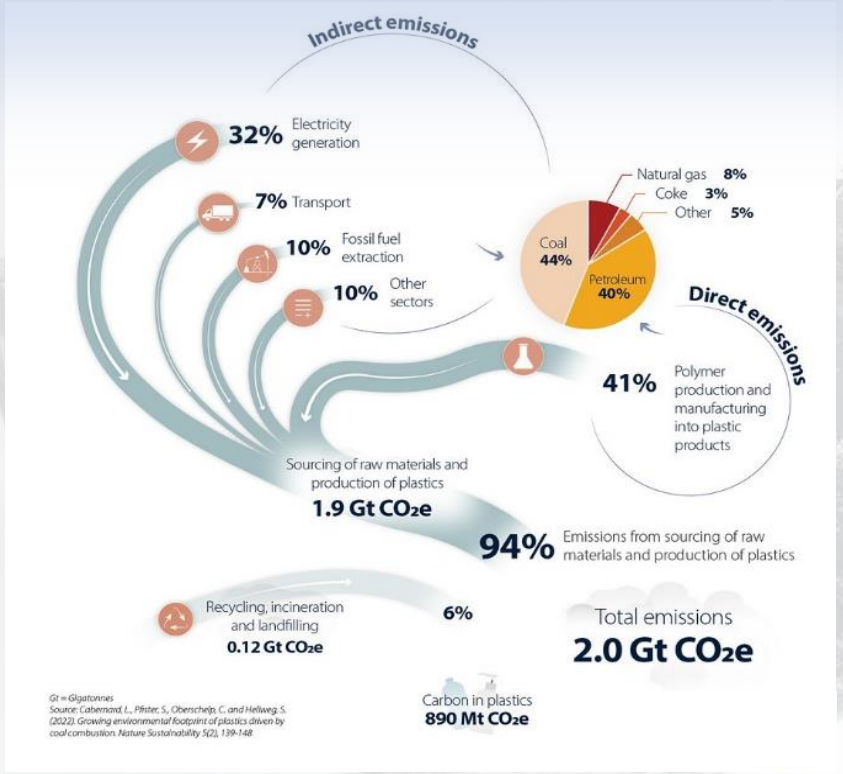
[그림] 전 세계 플라스틱 사용, 폐기물, 부적정 관리 및 유출량 예상 (2060)

1. Impact and outlook of plastic pollution

(3) 플라스틱 전주기와 온실가스 배출량

- According to GRID-Arendal, Climate Impacts of Plastics (2024), total greenhouse gas emissions over the entire life cycle of plastics (approximately 2 billion tons CO_2 eq)(About 94% of this is generated during the production of plastic raw materials and the manufacturing process of products.)
- Greenhouse gas emissions over the entire plastic life cycle are estimated to be approximately 3.8-4.5% of global greenhouse gas emissions. If plastic production triples by 2060. it is expected to increase by approximately 6 billion tons of CO2 eq. This is 10% of global greenhouse gases, a significant impact on carbon neutrality.





[Fig] Plastic Life Cycle and Greenhouse Gas Emissions (2019)

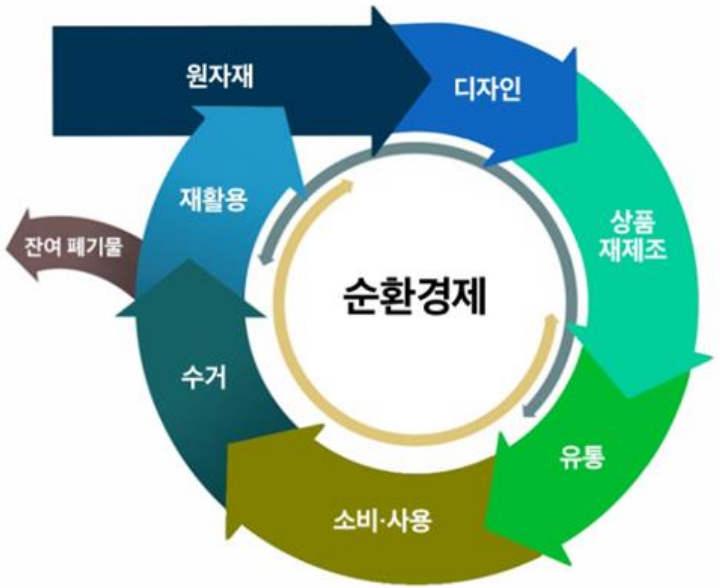
(Source : GRID-Arendal, Climate Impacts of Plastics, 2024)

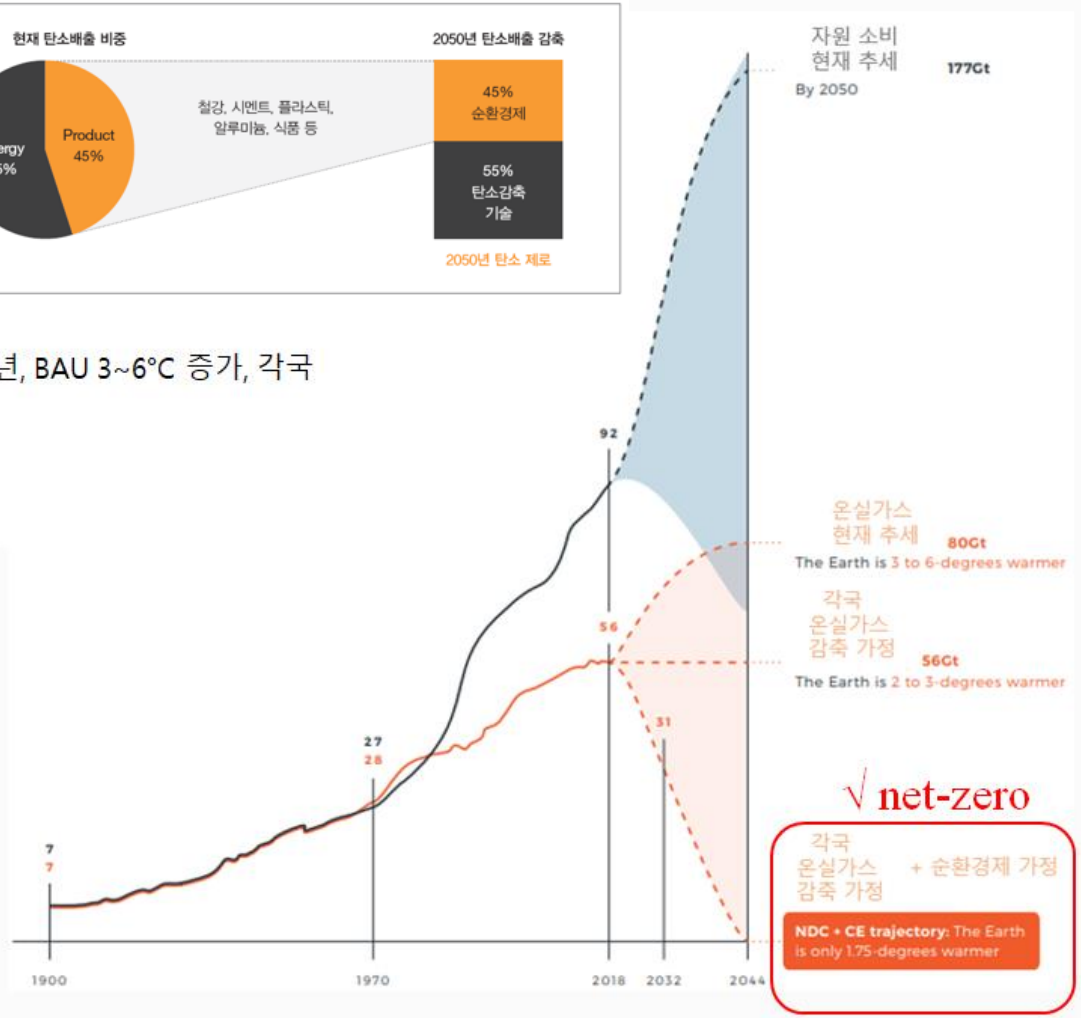
1. Impact and outlook of plastic pollution

(3) Contribution of circular economy to carbon neutrality.

국가별 온실가스감축목표 NDC+ 순환경제 시나리오 제시

- BAU: 800억톤 온실가스 배출/년, 3~6°C 증가 예상)
- 국가별 온실가스감축목표(NDC) 시나리오: 560억톤 CO_2 eq 배출/년, BAU 3~6°C 증가, 각국 국가감축 2~3°C 증가 예상)
- NDC+ 순환경제 추진: 탄소중립 실현, 1.75 °C 증가 예상





<그림> 순환경제와 탄소중립 기여 예측 시나리오
(출처: PACE, The circularity gap report, 2021)

1. Impact and outlook of plastic pollution

(4) Need for a major shift to a plastic circular economy

Problems caused by excessive plastic consumption in modern society include:

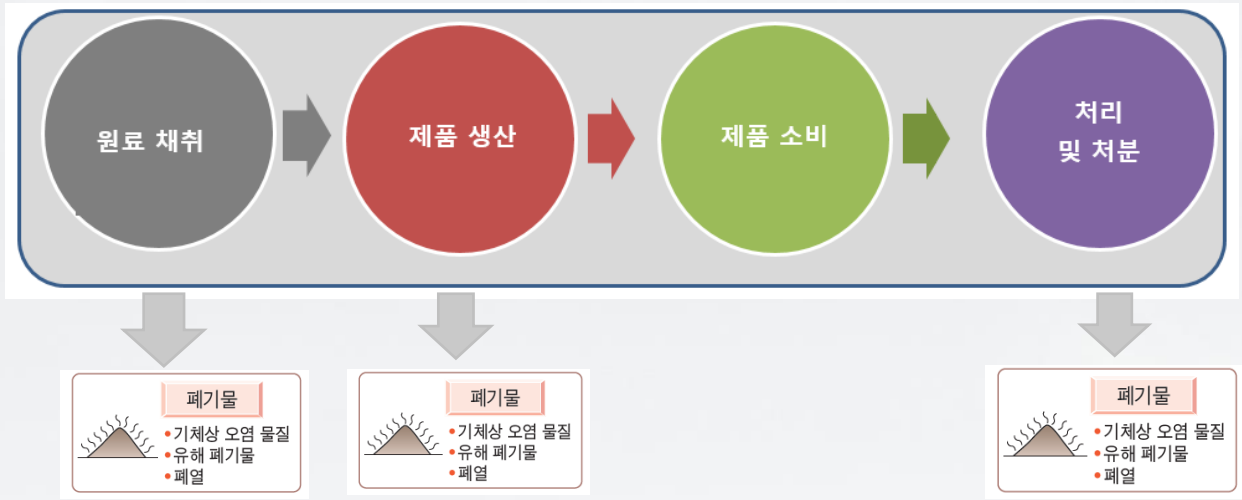
1) Various environmental pollution such as marine pollution, river/stream pollution, etc. 2) Climate change caused by greenhouse gas emissions 3) Economic loss (tourism, fishing industry) 4) Biodiversity crisis due to threats to ecosystem habitats 5) Health threats due to consumption of food containing microplastics

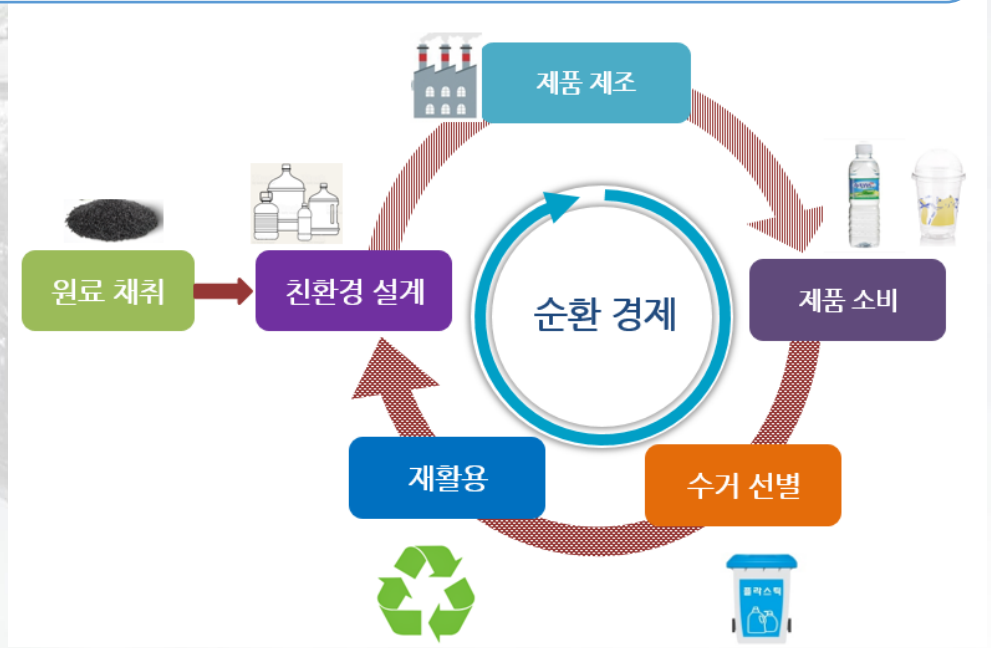
(SOURCE: WB, Plastic waste management for greenhouse gas reduction, 2022)

1. Impact and outlook of plastic pollution

Need for a major shift to a plastic circular economy

- Linear economy: The current socio-economic system in which "mass production-mass consumption-mass disposal" is the mainstream. The system has limitations in overcoming the current environmental, resource, and energy crises. A linear system (lacking in the concept of circulation) that proceeds from the stage of extracting raw materials to the production of products, distribution, consumption, and disposal.
- **Circular economy:** An economic system that suppresses waste generation throughout the entire process of production, distribution, consumption, and disposal, and converts the generated waste into circulatory resources to return it to the circulatory system of economic activity



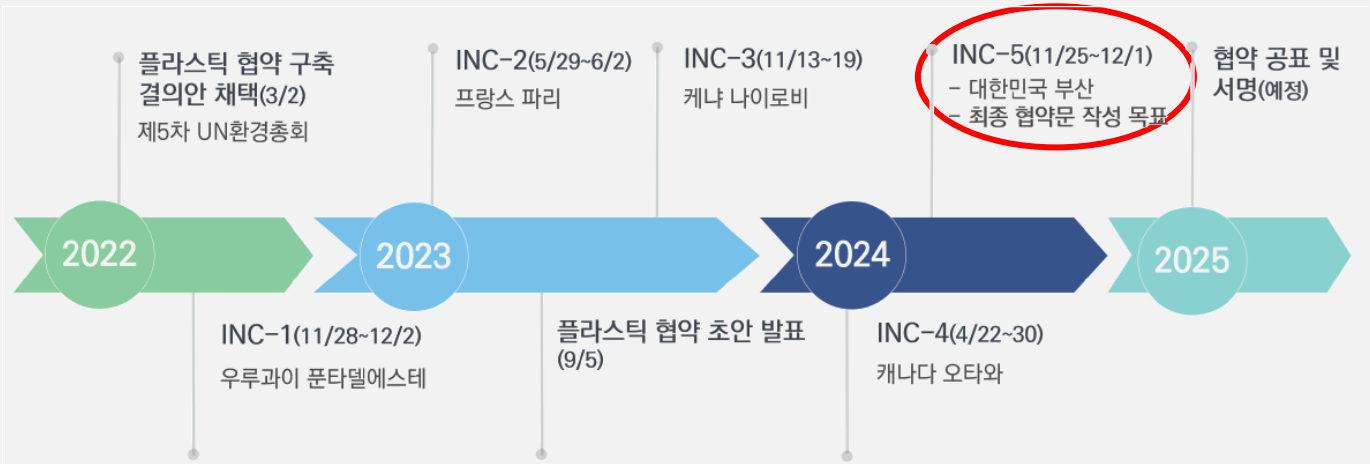


2. Issues and Agenda of Global Plastic Treaty

(1) Global Plastic Treaty): INTORDUCTION

- The international agreement on plastics aims to draft a legally binding agreement by the end of 2024 through a UN resolution to address plastic pollution, ecosystem protection, and climate change, as the negative impacts and pollution problems caused by improper management of plastics are spreading globally.
- INC-5th held in Busan, Korea (November 25-December 1, 2024): The last 5th international plastics agreement negotiation (The era of plastics circular economy)

[Fig] UNEA-5.2 Agreement on Global Plastics (March 22, Kenya) (source: un.org/climatechange/nationsagree-end-plastic-pollution)



[Fig] Schedule of preparation plan for international agreement on plastics

2. Issues and Agenda of Global Plastic Treaty

(1) Global Plastic Treaty: main agenda (under negotiation)

UNITED NATIONS

UNEP/PP/INC.5/4

United Environment Programme

Nations

Distr.: General
1 July 2024

Original: English

UNEP

Intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment
Fifth session
Busan, 25 November–1 December 2024
Item 4 of the provisional agenda

Preparation of an international legally binding instrument on plastic pollution, including in the marine environment

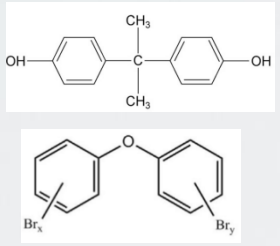
Compilation of draft text of the international legally binding instrument on plastic pollution, including in the marine environment*

[Fig] UNEP Plastics International Agreement 5th Negotiation Draft (July, 2024) (source: unep/nations-agree-end-plastic pollution)

2. Issues and Agenda of Global Plastic Treaty

(2) Global Plastic Treaty: life cycle management and measures

life cycle management



plastic polymers and chemicals

- Primary polymers
- Chemicals in additives
- Short-lived and single-use
- Microplastics /nono-plastics

Production and Circular Design

- Product eco-design
- Reduce/Repair /Reuse/
- Recycled content
- Bioplastic (alternatives)

Emissions/release to the environment

- Emission to the air
- Releases to land and water
- Development of emission inventory

Waste Management

- Recycling and EPR
- Fishing gear/Buoy
- Contaminated sites
- Plastic leakage

Global Plastic trade

- Trade in listed chemicals
- Trade in polymers and products
- Transboundary movement of plastic waste

2. Issues and Agenda of Global Plastic Treaty

(3) Global Plastic Treaty: 13 main agenda

[Figure] Elements in negotiation for global plastic treaty
(source: un.org/climatechange/nations-agree-end-plastic pollution)

[Figure] On final day of INC-4, delegates in Canada
(source: un.org/climatechange/nations-agree-end-plastic pollution)

2. Issues and Agenda of Global Plastic Treaty

(4) Key issues and prospects of the negotiation agenda for the Global Plastic Treaty

EU High Ambition Coalition countries
EU 27 countries, etc

① End global pollution by 2040
② Reduce global plastic production
③ Strengthen restrictions on the use of chemicals of concern and polymers
④ Regulated plastics (obligatory ban on global production, sale, distribution, import and export)
⑤ Microplastics (ban on global production, sale, distribution, import and export)
⑥ Circularity of plastic products
⑦ Private sector supports, respect for intellectual property rights
⑧ Mandatory introduction of Extended Producer Responsibility (EPR) in all countries
⑨ Mandatory minimum recycling rate standards for waste management
⑩ Requirement and disclosure of prior consent for trade in waste and polymers

Debate

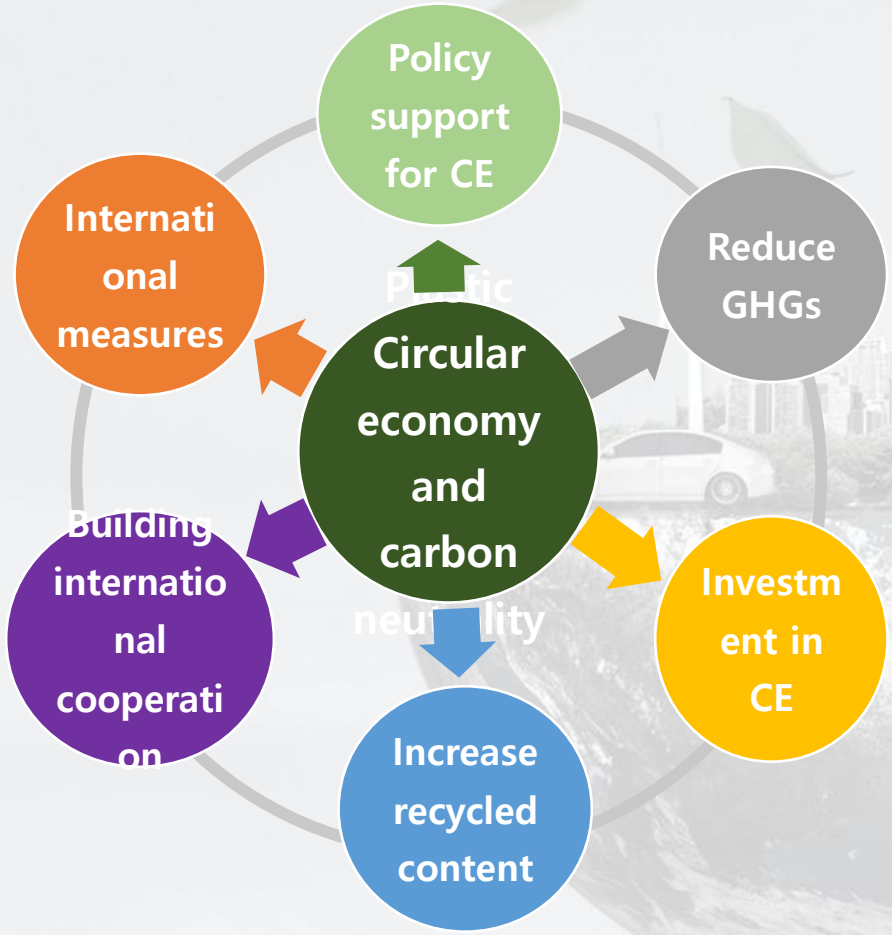
- **Target date**
- **Reduce production**
- **Regulations on chemicals**
- **microplastics**
- **Product circularity**
- **financing**
- **EPR**
- **Waste management**
- **Polymer trade**

Oil-producing countries in the Asian region,
China/Russia, Iran, and like-minded group (LMG)

① Voluntary goals considering each country's circumstances
② Voluntary production reduction/complete opposition by country
③ Only presenting regulatory standards for substances of concern and taking voluntary measures by country
④ Differential and gradual regulations considering each country's circumstances for regulated plastics
⑤ Compliance with country-specific regulations, scientific agreement and research in advance
⑥ Compliance with country-specific regulations
⑦ Financial burden and support from developed countries
⑧ Recommendation for voluntary introduction of Extended Producer Responsibility (EPR) by country
⑨ Regulation of recycling rates and processing requirements considering each country's circumstances
⑩ Need to avoid duplication with other international environmental agreements (Basel Convention)

3. International cooperation for plastic circular economy

(1) International cooperation measures for plastic circular economy:



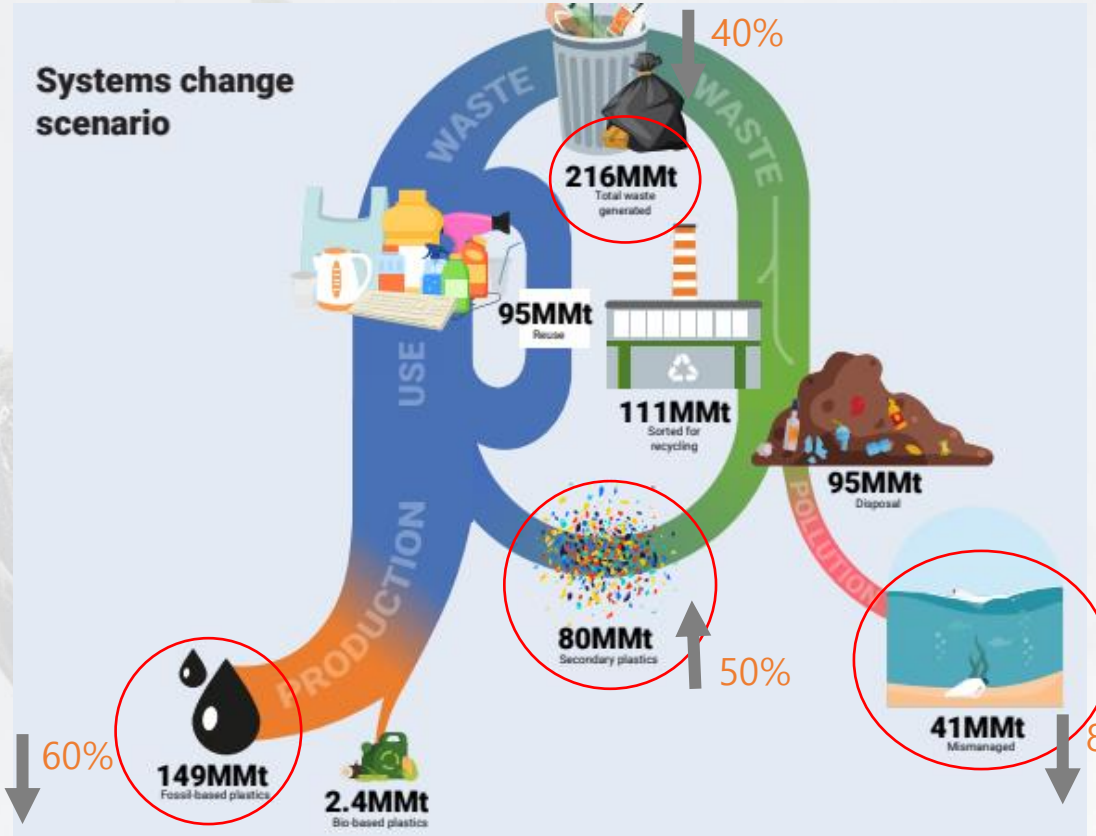
[Fig] International cooperation plan for global plastic circular economy

3. International cooperation for plastic circular economy

(2) Need to promote international cooperation for a major transition to a plastic circular economy : Transition to a global circular economy (target, less production, more reduction and recycling, less mismanagement)

(2020)

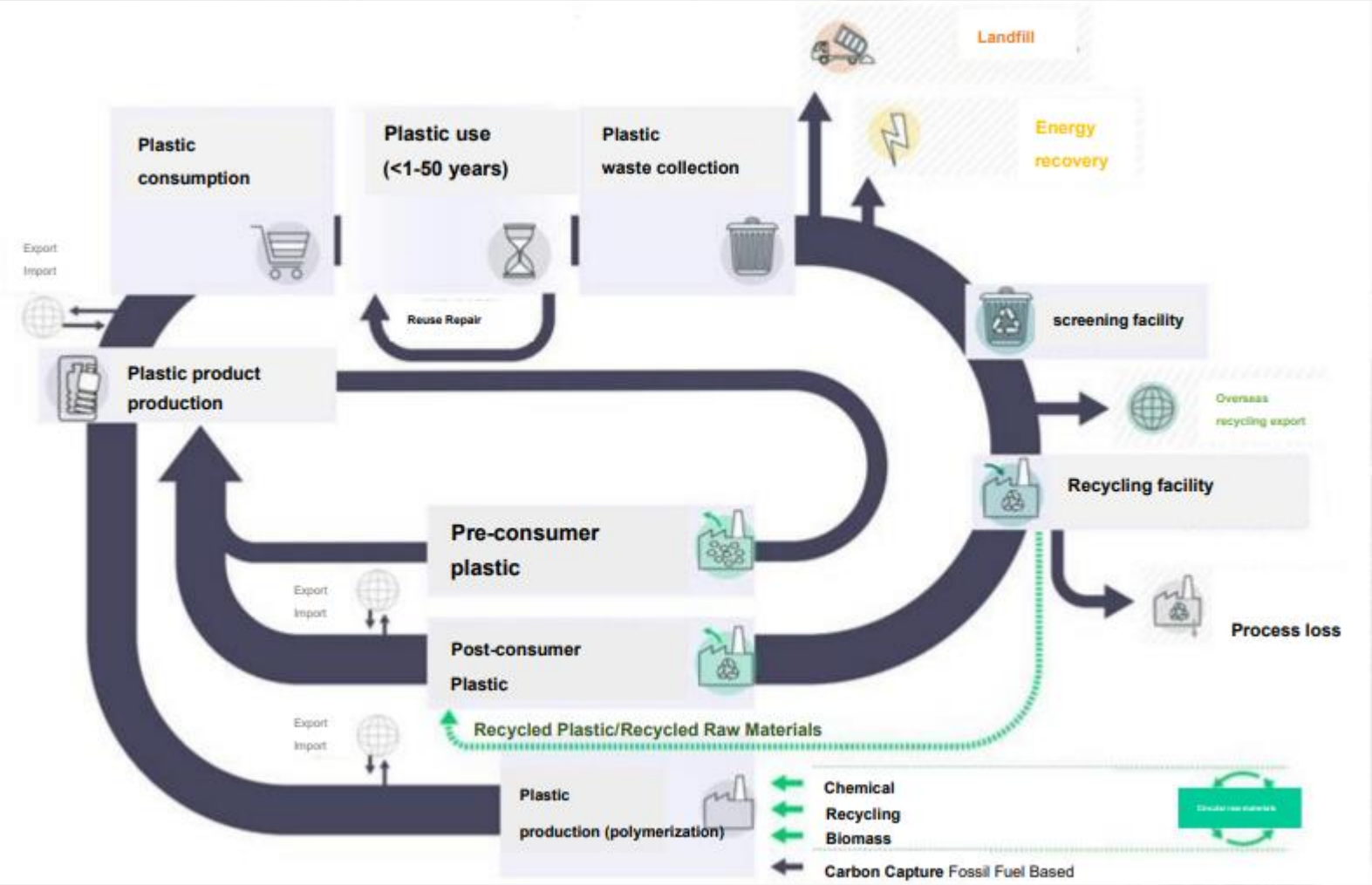
(2040)



[[Figure] Plastic circular economy transition and system change scenarios around the world (source: UNEP, turning off the tap, 2023)

3. International cooperation for a plastic circular economy

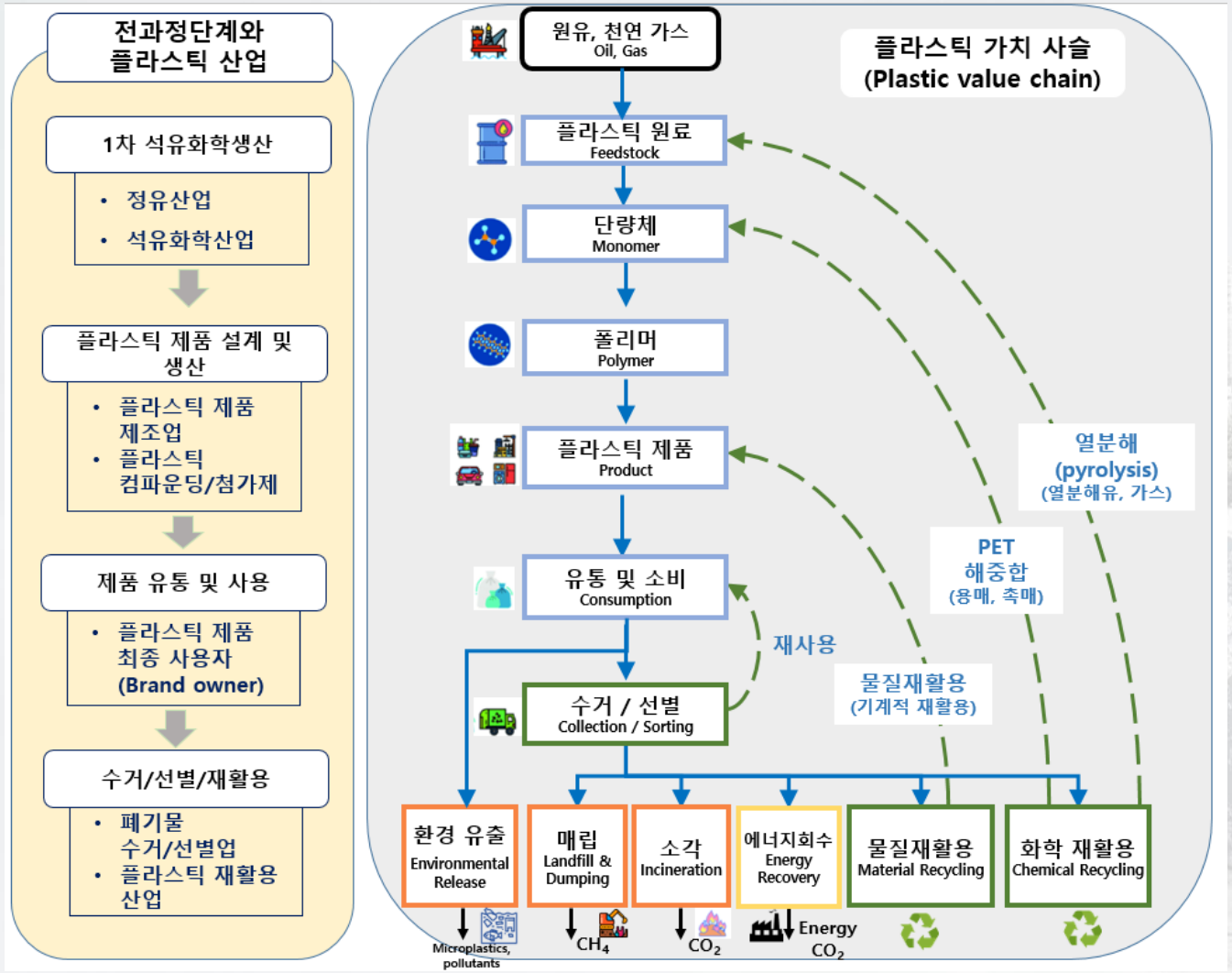
(2) Need to promote international cooperation for a major transition to a plastic circular economy: Setting a European plastic circular economy target



[그림] 플라스틱 순환경제를 위한 재생원료 생산 확대 (출처: Plastic Europe, 2023)

3. International cooperation plan for plastic circular economy

(3) Need for international cooperation for a major transition to a plastic circular economy: Direction of Korea's plastic circular economy

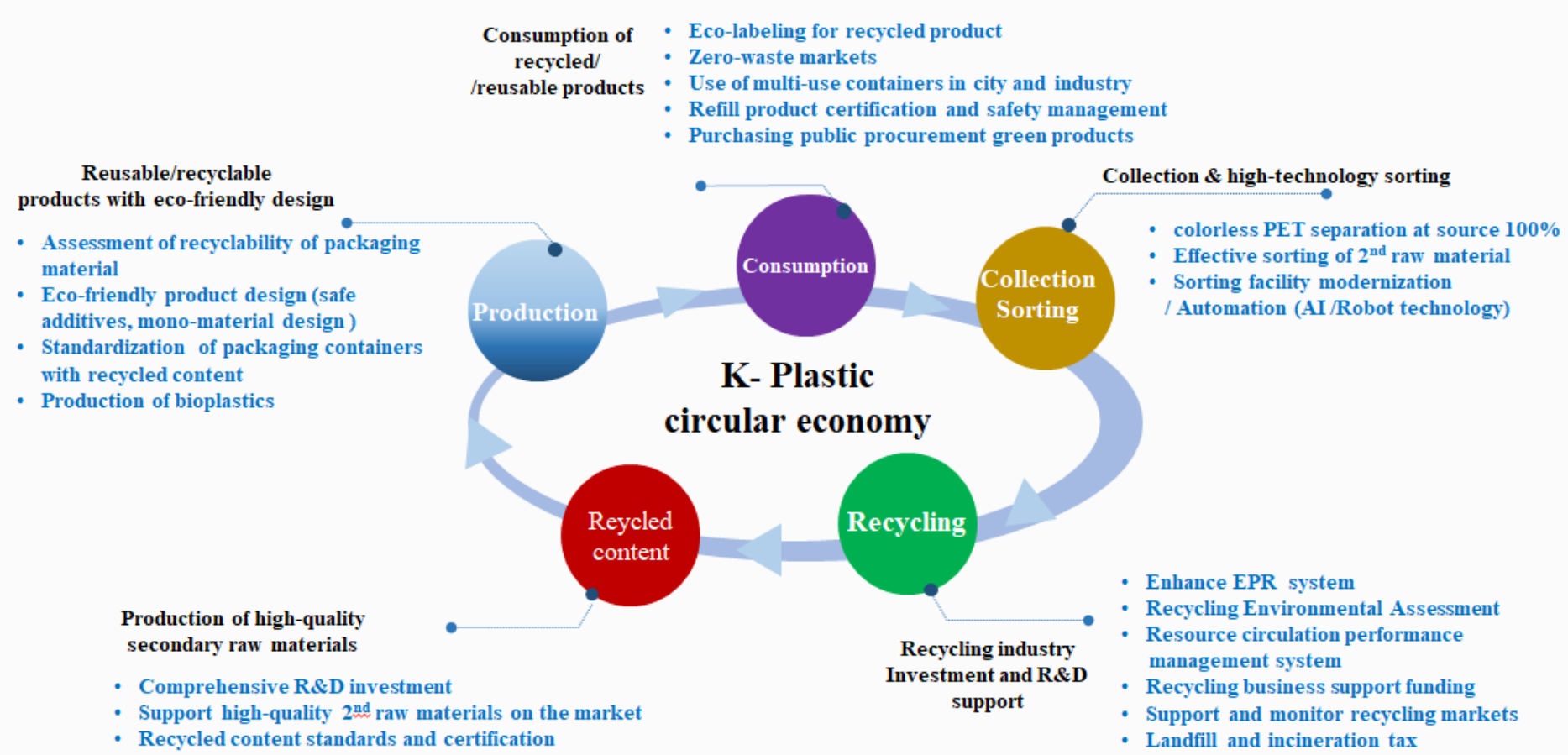


[Figure] The value chain of the plastics life cycle and the plastics industry

3. International cooperation plan for plastic circular economy

(3)) Promoting international cooperation for a major transition to a plastic circular economy: Korean (K)-plastic circular economy

- Eco-friendly design, mandatory use by end-product producers, investment in and modernization of collection/recycling technology, production of high-quality recycled raw materials

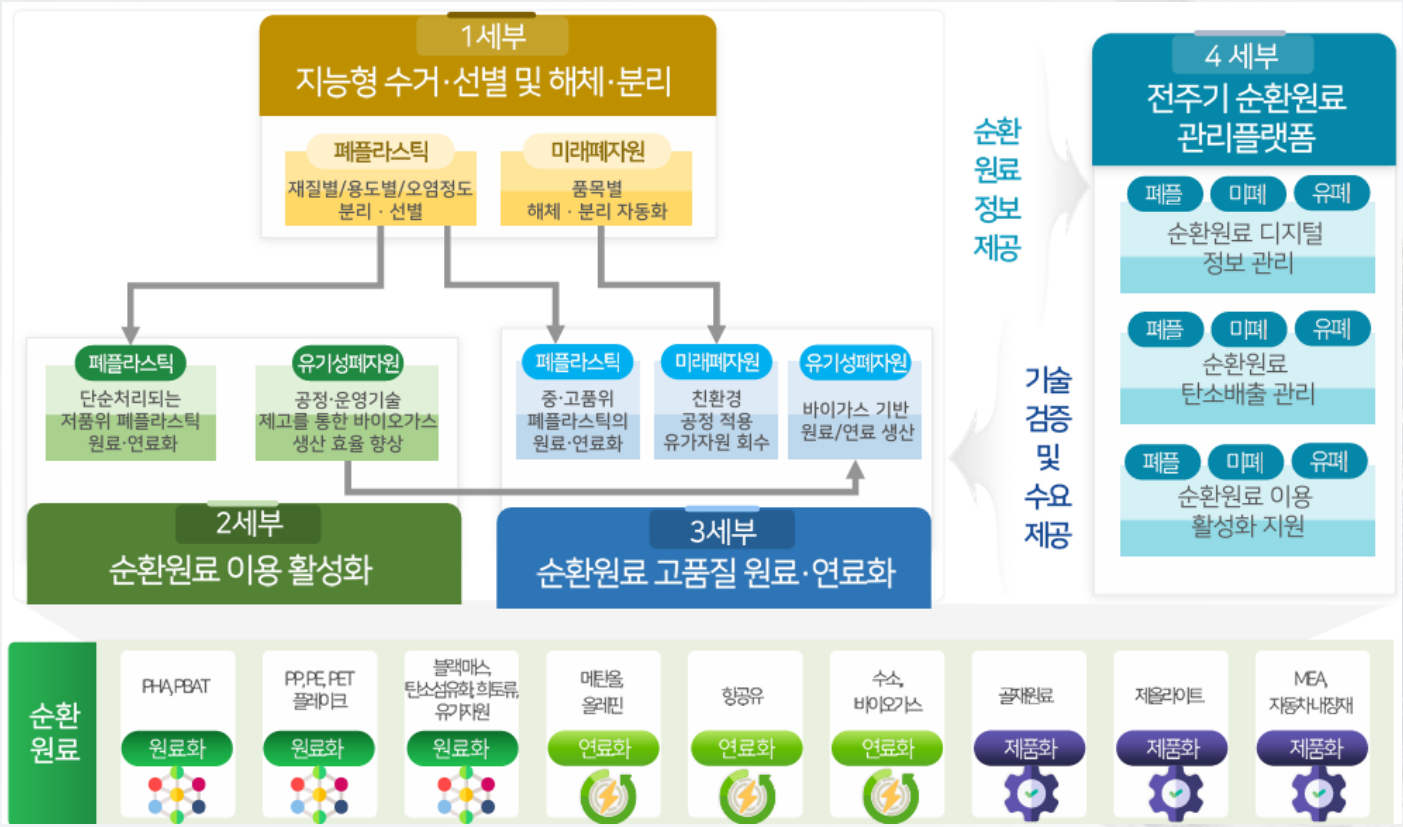


[Figure] Building a circular economy to expand plastic recycling resources

3. 플라스틱 순환경제를 위한 국제협력 방안

(3) Promoting international cooperation for a major transition to a plastic circular economy: Korean (K)-plastic circular economy

- **Investment in the development and modernization of intelligent collection/recycling technology and production of high-quality recycled raw mate**
- Ministry of Environment invests approximately KRW 500 billion (USD 400 million) in technology development (2026-2032)



<그림> 글로벌 순환원료 공급을 위한 국가 R&D 사업(안)

(출처: 환경산업기술원, 기획공청회 자료, 2024. 8.14)

3. International cooperation for a plastic circular economy

(4) Sharing experiences and results of operating the Korean EPR recycling system

- Korea has a recycling system in place, having operated the producer responsibility recycling system for over 20 years (2003-present). In 2021, the volume of plastic packaging materials shipped was approximately 1 million tons, and approximately 90% of this was recycled through the Extended Producer Responsibility (EPR)

[Table] Operation of the Korean EPR system and recycling performance of plastic packaging materials (2021)

Types of plastic		Shipment volume (ton)	Recycling amount (ton)	Recycling rate (%)
PET bottles	Colorless	302,564	234,184	77%
	Colored	28,191	23,398	83%
	Multi-layer electrical and	9,655	10,409	104%
EPS	electronic products	56,771	58,882	98%
	Agriculture Other			
PSP		8,334	4,628	56%
PVC		3,613	1,391	38%
plastic Containers	PE, PP, PS	275,180	285,535	122%
	Multi- & Films	361,229	324,769	90%
Total		**1,045,537**	**943,196**	**90.2%**

(Source: KORA, 2023)

3. International cooperation plan for plastic

(4) Sharing experiences and achievements in operating the producer responsibility recycling system in Korea: Responding to plastic pollution in the Philippines (2022)

East Asia and Pacific Region: **MARINE PLASTICS SERIES**

Combating the Plastic Waste Crisis in the Philippines

Implementing Extended Producer Responsibility with Lessons Learned from Korea

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

The team of World Bank staff and international consultants that prepared this publication was led by Junu Shrestha (Senior Environmental Specialist). The research was carried out by Jana Brinkmann, Stephan Löhle, Agnes Bünemann, Thilo Vogeler, Wassim Chaabane, and Alvina Zakirova from cyclos GmbH; Professor Yong-Chul Jang and Ji-Hyun Jeong from Changnam National University; Professor Seung-Whee Rhee from Kyonggi University; and Attorneys Gregorio Rafael P Bueta, Cecilia Guiao, Aya de Leon, and Justine Nicole Torres from Parabukas.

(source: WB, Combating the plastic waste crisis in the Philippines, 2023)

3. International cooperation for a plastic circular economy

(5) Korea's international cooperation on plastic pollution

- Marine debris in Manila Bay, Philippines
- (2021~2025년 USD 7.8 millions)

- Supported by Korea International Cooperation Agency (KOICA), Korea Marine Environment Management Corporation & OSEAN

Indonesia

Marine Debris Reduction through Enhancing River Waste Management in Republic of Indonesia('21-'25/$2.5mil)

The project supports pilot design, installation, and operation of trash boom in Cisadane River. And it includes an installation and improvement of pre-treatment and recycling facilities for waste collected from Cisadane River, and community in Tanjung Burung Village. Lastly, it supports Capacity building programs and enhancement of public awareness for river waste reduction

ABOUT US

KOICA
Korea International Cooperation Agency

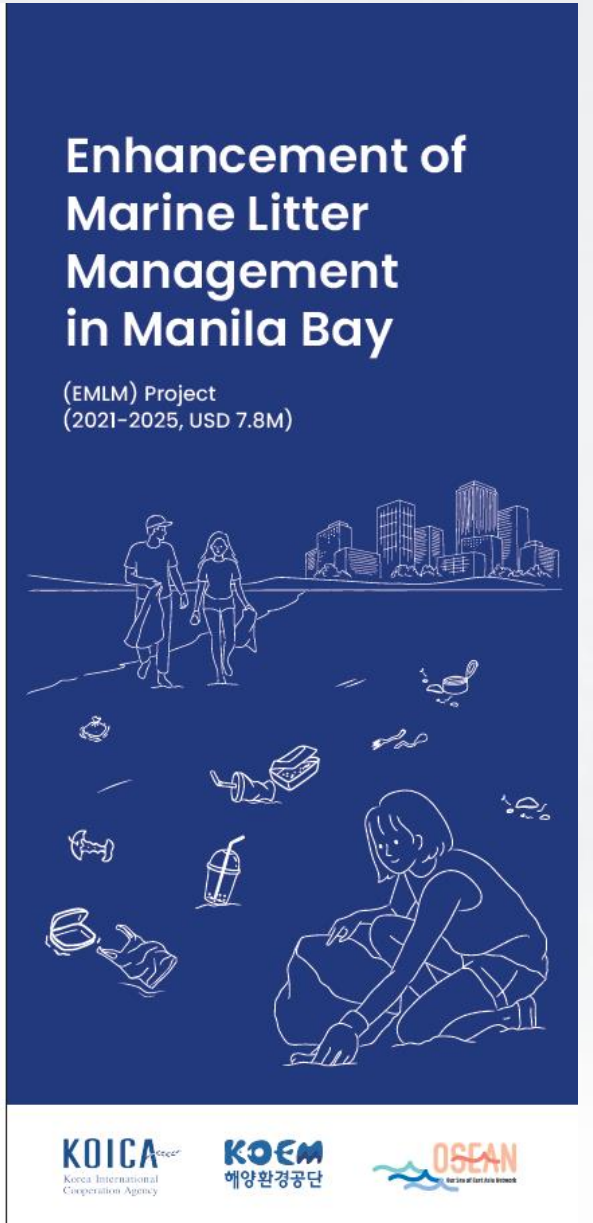
KOICA, Korea's representative development cooperation agency and grant provider, was established in 1991 under the Ministry of Foreign Affairs. By sharing Korea's unique development experience, exemplified by our journey from aid recipient to donor, and advanced capacities with partner countries, KOICA aims to realize global values through cooperation and solidarity.

KOEM Korea Marine Environment Management Corporation

KOEM is centered around efficiently promoting the conservation, management, and improvement of the marine environment, as well as marine pollution control as a leading public corporation in the field of marine environmental management in Korea. Thus, KOEM strives to contribute towards realizing a green future by establishing a clean and rich marine environment.

OSEAN

OSEAN is a network hub protecting the marine environment in East Asia and the Asia-Pacific by implementing science and public participation. As both a non-profit civic organization and a research institute accredited by the United Nations Environment Programme, OSEAN conducts research and monitors marine litter along the South Korean peninsula by utilizing scientific expertise and fostering citizen science.



Summary & Key Messages

(1) The rapid increase in plastic production and consumption is accelerating the global plastic pollution crisis due to improper management and disposal

(2) Need to establish an international agreement to achieve carbon neutrality and build a plastic circular economy by 2050

(3) A major industrial transformation is needed at the national and international levels to end plastic pollution and build a circular economy.

(4) It is urgent to establish a global cooperation system for the plastic circular economy to respond to the climate crisis and ensure sustainable society for future generations (e.g., preparing global plastic treaty agreements, implementing and strengthening compliance, supporting plastic circular economy policies, investing in circular economy technology, supporting pollution prevention and international cooperation)

감사합니다

Thank you!

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