

# Roadmap for Bioplastics Introduction [Overview]

## Main points

January 2021, Government of Japan

Toward realizing "Resource Circulation Strategy for Plastics", "Roadmap for Bioplastics Introduction" is formulated to promote substitution of current fossil-based plastics to sustainable bioplastics, based on the basic principle of "3Rs + Renewable".

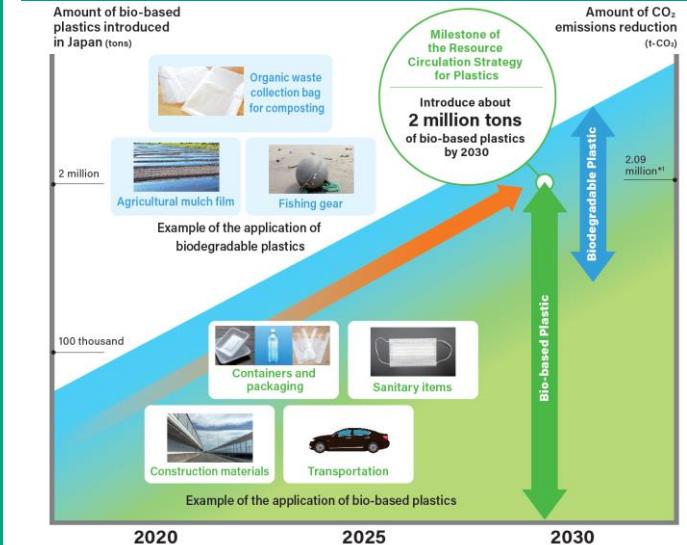
► For all stakeholders related with bioplastics introduction, [\[1\]Basic principles for introduction](#) and [\[2\]Bioplastics suitable for each plastic product area](#) (in the next page) are indicated.

► To strongly support actions for bioplastics introduction, [\[3\]measures](#) by the government of Japan are stated.

## [1]Basic principles for introduction

Raw materials	To diversify raw materials, expand the scope of the raw material uses of domestic biomass (resource crops, waste cooking oil, cellulosic sugars such as pulp) (in a manner so that it will consider sustainability such as competition with food and feed)
Supply	Although it is necessary to increase the supply of bioplastics produced both domestically and in abroad, in particular, support Japanese companies to increase the production of bioplastics for expanding the range of supply sources in Japan.
Cost	Optimize the cost of bioplastic production via collaboration and cooperation among related entities. In addition, promote the use of bioplastics in a way that takes their environmental value into account by appealing to users of using their environmental value
Functions during use	Aim to develop and introduce bioplastics with general-purpose functions and bioplastics with higher functionality, including durability and toughness, and aim to further expand applications by flexibly considering the product performance
Post-use flow	Introduce bioplastics with high suitability on post-use flow (recycling, composting and anaerobic digestion for biogas production, energy recovery)
Environment and social aspects	Use bioplastics that have been confirmed to be more sustainable over their entire life cycle, such as greenhouse gas emissions, land use change, biodiversity, labor, governance and competition with food and feed

## Image of biplastic products introduction



## [3]Measures

	2020-2021	2022-2025	2026-2030	-2050
Promotion of the use	Compilation of examples and commitments of bioplastics introduction, promotion of business matching (CLOMA, Plastic Smart Campaign)			
	Act on Promoting Green Procurement, consideration of measures to increase demand for bio-derived products, proactive procurement by local governments			
	Examination of fair and equitable recycling system			
	Examination toward the international standards for evaluation methods of marine biodegradability function			
Appeal to consumers		Examination of structure of certification and labeling system considering sustainability	Start operation	
	Promotion of the proactive use of bioplastic products and correct understanding			
Research and development	Support for R&D and demonstration projects to improve functions, reduce costs, and diversify raw materials			
	Support for the installation of manufacturing facilities			
	Support for facilitation of fundraising for R&D and the installation of manufacturing facilities in private companies by ESG finance			
Follow up	Research and follow up on amount of introduced bioplastics by applications and materials, international trends and technological trends related to bioplastics			

## [2]Bioplastics suitable for each plastic product area

Product area	<b>Suitable bioplastics for introduction</b> Category 1: Bio-based plastics (nonbiodegradable) that have no adverse effects on recycling and belong to either [1] or [2] below: [1] Bio-based general-purpose plastics (At present, bio-PE, bio-PP, and bio-PET) [2] The same types of bio-based plastics that substitute for fossil-based high-performance plastics (e.g., PA → bio-PA, PC → bio-PC) Category 2: Bio-based plastics (nonbiodegradable) Category 3: Biodegradable plastics (plastics with suitable biodegradability in each environment)	<b>Matters that need to be considered for each product area</b> (Impacts on post-use flow, including recycling)
Containers and packaging Plastic shopping bags	Category: 1	
Electrical and electronic equipment, wires and cables, and machinery		From the viewpoint of post-use impacts, Category 1 with low impacts on current plastic recycling system is introduced. However, if a single type of plastic is recycled through sorted collection and separation, all categories may be applicable; therefore, the one with the higher effect for environmental impact reduction is to be selected.
Daily goods, clothing and footwear, furniture, toys used in households and offices Combustible waste collection bags	Category: 2	Category 2, which contributes to reducing greenhouse gas emissions, is introduced. There must be no inhibition of energy recovery.
Organic waste collection bags for composting and anaerobic digestion	Category: 3	From the viewpoint of functions after use, those with biodegradable functions such as composting or anaerobic digestion are introduced from Category 3. These are required to have a biodegradable function that can be sufficiently degraded via composting or anaerobic digestion.
Construction materials	Category: 1	
Transportation Agriculture, forestry, and fisheries		From the viewpoint of post-use impacts, Category 1 with low impacts on current plastic recycling system is introduced. However, if a single type of plastic is recycled through sorted collection and separation, all categories may be applicable; therefore, the one with the stronger effect for environmental impact reduction is to be selected.
Agricultural mulch films	[For collection and recycling] Category: 1 [For plowing into the soil of farmland] Category: 3	[For collection and recycling] From the viewpoint of post-use impacts, Category 1 with a low impact on the current plastic recycling system is introduced. However, if a single type of plastic is recycled through sorted collection and separation, all categories may be applicable; thus, the one with the stronger effect on environmental impact reduction is to be selected. [For plowing into the soil of farmland] From the functions after use, those with biodegradable functions in the soil are introduced from Category 3. This is limited to cases where the plastic is plowed into the soil of farmland under proper management as a part of the farming process. [For collection and recycling] There must be no adverse effects when bioplastics are mixed in the recycling process. [For plowing into the soil of farmland] These are required to have biodegradable functions in the soil.
Coating materials for controlled-release fertilizer	Category: 3	From the viewpoint of post-use impacts, plastics with biodegradability in both soil and ocean are introduced from Category 3. These are required to have biodegradable functions in the soil and the ocean if they are leaked into the natural environment.
Production materials for fisheries, such as fishing gears	[For collection and recycling] Category: 1 [For cases where high strength or durability is not necessarily required] Category: 3	[For collection and recycling] From the viewpoint of post-use impacts, Category 1 with a low impact on current plastic recycling system is introduced. However, if a single type of plastic is recycled through sorted collection and separation, all categories may be applicable; thus, the one with the higher effect on environmental impact reduction is to be selected. [For cases where high strength or durability is not necessarily required] From the viewpoint of post-use impacts, plastics with biodegradable functions in the ocean are introduced from Category 3. [For collection and recycling] There must be no adverse effects when bioplastics are mixed in the recycling process. [For cases where high strength or durability is not necessarily required] These are required to have biodegradable functions in the ocean if they are leaked into the marine environment.

Note: Because changes in the status and characteristics of use, composition of products, recycling technologies and systems, and development of new bioplastics may alter the categorization, this table will be updated as required.