

## Earth

## Resource Circulation

## Recognizing Social Issues

## Resource Recycling for Materials

In the context of a growing world population, the global community is facing challenges due to an increase in demand for resources and the worsening environmental issues, including the rising amount of waste. To address these challenges, it is necessary to transition to a circular economy that considers medium- and long-term outlooks, but also to promote the conventional 3R (reduce, reuse, and recycle) initiatives in all economic activities. A circular economy intends to generate new value while reducing resource inputs and consumption and making effective use of social stock. Plastic recycling is indispensable in achieving a circular economy. In Japan, currently an estimated 60% of plastic waste goes through thermal recycling, which means that the waste is combusted in incinerators to produce energy. In Western countries, however, usually combustion is not included in the concept of recycling. Also, a minute amount of dioxin is generated during the process of combustion. For these reasons, companies are required to contribute to the circular use of resources (material recycling/chemical recycling) or the use of biomass plastics.

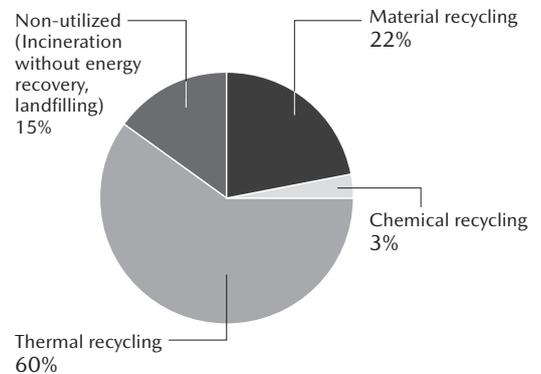
## Resource Recycling for Water

Of the total volume of water existing on the planet, only 0.01% is useable by humans. This small amount of water is not distributed around the world, so a number of countries and regions face high water stress\*.

If the earth's temperature continues to increase due to climate change in the future, the sea levels will rise owing to the thermal expansion of the oceans and melting ice caps. This will result in rivers being contaminated with salt water, a rise in groundwater levels and other disasters that will reduce the amount of freshwater available to humans. Meanwhile, the United Nations World Water Development Report 2018 states that by 2050, global demand for water is expected to increase by 20-30% from 2010, driven by population growth, economic development and changing consumption patterns, among other factors. Companies must address the issues regarding global water resources in order to conduct sustainable business activities.

\* Term that refers to the ability, or lack thereof, to meet human and ecological demand for water

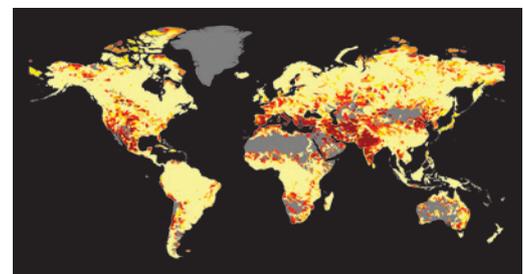
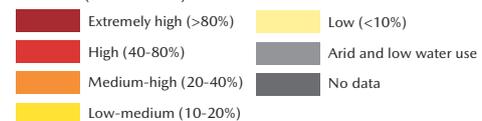
## Breakdown of plastic waste recycling by type (Japan)



The above pie chart was created by Mazda, based on "An Introduction to Plastic Recycling 2021" published by the Plastic Waste Management Institute. *An Introduction to Plastic Recycling 2021*, edited by Plastic Waste Management Institute, 2021, p7

## Water stress around the world

## Baseline (water stress)



"17 Countries, Home to One-Quarter of the World's Population, Face Extremely High Water Stress", World Resources Institute/Aqueduct, <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

## Mazda's Approach to Resolving Issues

## Reasons for Addressing Social Issues

Around 2030, Mazda forecasts progress in various initiatives to realize a recycling-oriented society from the perspective of natural capital. This will be achieved through using resources without any losses, promoting the 3Rs to encourage the reuse of water, plastic and other resources, and establishing resource circulation systems, such as a circular economy. Meanwhile, a significant reduction in energy and resource losses throughout the entire vehicle manufacturing supply chain may be expected as a result of efforts to make process more efficient. Dramatic progress will also be made in recycling and waste reduction initiatives through the promotion of the 3Rs and the transition to a circular economy. Aiming to become a company that can coexist in harmony with the earth, Mazda will continue to implement thorough recycling and waste reduction initiatives.

## Approach to Resolving Social Issues

To carry out product development and design with consideration for recycling needs, Mazda builds resource-recycling initiatives into every phase of the lifecycle of its vehicles, based on the 3Rs. Many limited resources are used to manufacture vehicles, such as steel, aluminum, plastics and rare metals. At its business sites (areas of manufacturing, logistics, etc.), the Company will push forward with initiatives toward the realization of a recycling-oriented society from two different perspectives shared throughout the entire vehicle supply chain. One is the well-to-wheel perspective, and the other is the global & supply chain perspective.

## Mazda's Initiatives

### Resource Recycling Initiatives for Products

Mazda is steadily increasing the recyclability of its new vehicles, drawing on the following initiatives.

1. Research into vehicle design and dismantling technologies that simplify dismantling and separation, to make recyclable parts and materials easier to remove
2. Use of easily recyclable plastics, which constitute the majority of ASR\* by weight

\* Automobile Shredder Residue

It refers to the residue remaining after the crushing/shredding of what is left of the vehicle body following the removal of batteries, tires, fluids, and other parts requiring appropriate processing; the removal of engines, bumpers, and other valuable parts; and the separation and recovery of metals.

### Resource-Recycling Initiatives at Business Sites

Mazda will pursue and promote environmental technologies that will contribute to resource/energy value maximization (by minimizing consumption and fully utilizing resources/energy without any waste) and resource/energy diversification.

### Resource Recycling for Materials

The Mazda Group continues to expand its global efforts for zero emissions and resource recycling, by such means as using resources without any losses, and 3R activities (to reduce, reuse, and recycle resources).

2030	2050
Achieve zero emissions* in manufacturing and logistics processes on a global basis. *The status in which landfill waste is reduced to 0.1% or lower of the total waste generated. The Mazda Group companies in Japan achieved zero emissions in 2018.	Achieve zero emissions through expanded resource recycling initiatives* in manufacturing and logistics processes on a global basis. * Break away from dependence on thermal recycling or other combustion-based recycling methods, and augment material recycling.

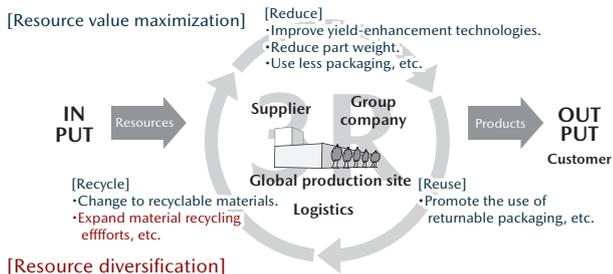
### Resource Recycling for Water

To conserve water resources, the Mazda Group promotes activities to eliminate wasteful water use, and circulate water resources by treating used water so that it is the same quality as it was taken from nature.

2030	2050
Implement an optimal approach to water resources recycling and circulation at model plants* in Japan. •Fully utilize water without any waste, as a valuable resource that is a natural blessing. •Circulate water as a valuable resource that is a natural blessing, by treating used water so that it is the same quality as before it was used, and returning it to nature.	Implement an optimal approach to water resources recycling and circulation in global manufacturing processes. •Fully utilize water without any waste, as a valuable resource that is a natural blessing. •Circulate water as a valuable resource that is a natural blessing, by treating used water so that it is the same quality as before it was used, and returning it to nature.

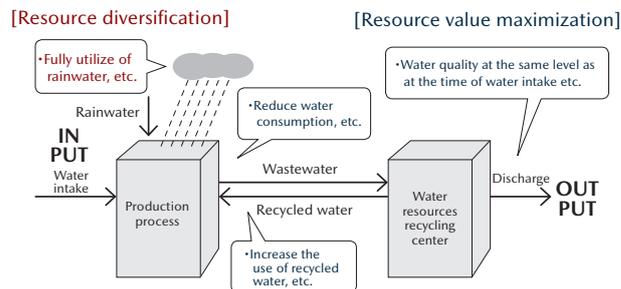
\* Model plant: A pilot plant where new attempts are made, ahead of other facilities.

### Ideal vision



[Resource diversification]

### Ideal vision

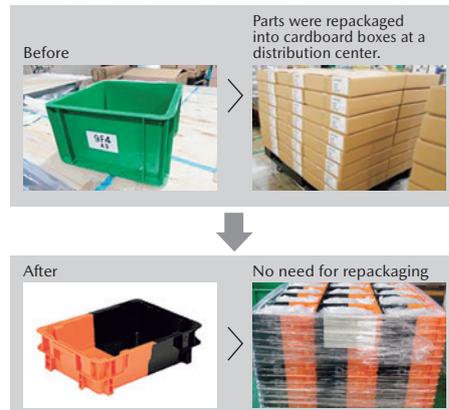


## TOPICS

### Reducing Disposable Containers and Promoting the Use of Returnable Containers

Mazda is moving forward with 3R initiatives by such means as promoting the use of returnable containers, simplifying packaging specifications, and encouraging the reuse of materials. Since FY March 2013, the Company has been continuing activities to reflect logistic needs at the beginning of product development. These activities aim to optimize parts specifications and structures by taking into account these logistic needs in all work processes, from design to production and shipment. Furthermore, as for parts to be exported to overseas assembly plants, in 2015 Mazda started to use the same returnable containers to transport parts from the supplier to its transmission plant in Thailand, where these parts are assembled, so as to eliminate the need for repackaging these parts into cardboard boxes at a distribution center. In FY March 2021 this method enabled the Company to cut down around 850 tons of packaging and wrapping materials that would be discarded. Mazda is considering introducing this method at its plant in North America. The Company will continue its endeavors to reduce the use of packaging and wrapping materials, primarily by expanding the introduction of returnable containers.

### Introduction of returnable containers



## Contribution to the SDGs

### Goals and Targets

(6.3) Improve water quality through various measures.

(9.4) Upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes.

(12.4) Achieve the environmentally sound management of chemicals and all wastes, and significantly reduce their release in the air, water and soil.  
(12.5) Substantially reduce waste generation.