

Resource Recycling

Basic Concept

Due to the increase in resource usage amounts caused by the rise in the global population and economic growth, there are concerns that problems such as depletion of water and other natural resources and marine pollution by waste materials will become more serious.

Based on the Environmental Action Principles and Environmental Action Guidelines, Toho Gas Group has set Environmental Action Goals in the area of Resource Recycling, and is promoting the 3R (reduce, reuse and recycle) toward the reduced consumption of natural resources and the effective use of recycled resources through efforts that include zero emissions from industrial waste at city gas plants, recycling the waste generated from gas pipeline work, and the promotion of paperless business.

Initiatives to Reduce Waste and Resource Consumption in Our Business Activities

Working to achieve zero emissions of industrial waste at city gas plants

Since FY2008, we have been working to achieve zero emissions of industrial waste at city gas plants and reduce the final disposal rate of industrial waste. Our environmental action goal is to achieve a final disposal rate of 1% or less, and we are continuing to work toward that.

Regarding waste from plants, the recycling of sludge and mixed waste generated at seawater intake ports has been a concern, and these account for 80% of our final disposal volume. To handle sludge, we turned to graded recycling, which separates the sludge into slurry, sand, silt, and clay depending on the grain size, and remixes them to create a stable fluidization treatment soil. In this way, we have improved the recycling rate of sludge. In terms of mixed waste, we carefully sort and separate materials, thereby enhancing the recycling rate.

Through these initiatives, we have reduced the final disposal rate of industrial waste, aiming to achieve zero emissions for the entire period of the environmental action goal.

Recycling industrial waste and reducing natural sand in gas pipeline construction

Gas pipeline construction generates industrial waste such as asphalt and concrete blocks classified as rubble and used polyethylene pipes classified as waste plastic. To reduce the amount of asphalt and concrete blocks and excavated soil generated, we introduced shallow-layer pipe installation^{*1}, the trenchless pipe installation method^{*2}, and the repair and rehabilitation method^{*3}, and we promoted the use of temporary filling material^{*4} in work requiring re-excavation. As a result, in FY2023, we were able to reduce the amount of excavated soil by 26% compared to conventional construction methods.

In addition, we processed excavated soil at a soil improvement center and reused it as backfill material for gas pipeline construction, resulting in a 74% reduction in external discharge of excavated soil compared to traditional methods. Furthermore, by combining the excavated soil with reused crushed stone, we were able to reduce the amount of natural sand and crushed stone used in gas pipeline construction by 9.9% compared to conventional methods.

By reducing the extraction of new sand, we are

contributing to lowering our impact on biodiversity in ecosystems.

Nearly all asphalt and concrete blocks are recycled as reused asphalt mixture (pavement material). Additionally, used polyethylene pipes are recycled as raw material for protecting gas pipes. As a result, we achieved a recycling rate of 99.6% for industrial waste generated from gas pipeline construction.



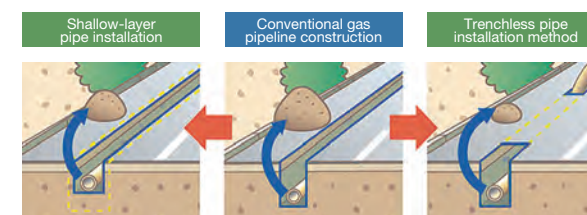
Trenchless pipe installation method

*1 This refers to burying a gas pipeline in a roadway at approximately half the conventional depth.

*2 This method involves drilling at both ends of the construction area and pulling the gas pipeline underground.

*3 The method of repairing a gas pipe from the inside

*4 Polyethylene ball material used as temporary backfill



Resource Recycling

Recycling used gas equipment and other materials

The Toho Gas Group has a system to collect used gas equipment and packing materials from customers to ensure efficient resource recycling. In FY2023, we collected 775.6 tonnes of reused equipment and 39.3 tonnes of packing material. In addition, we were able to recycle 3.5 tonnes of plastic containers and packaging and 0.4 tonnes of paper subject to the Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging.



Recycling used gas equipment

Reducing waste and recycling resources

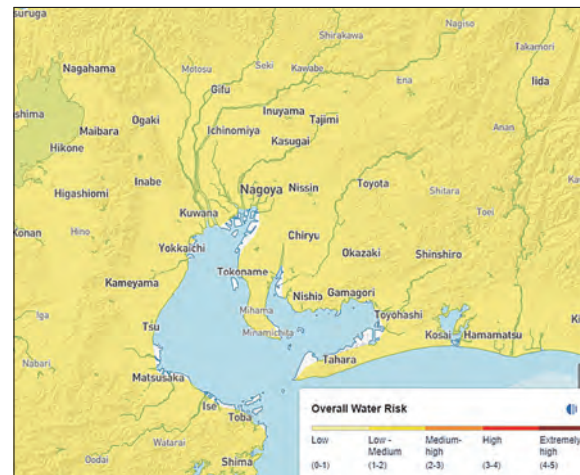
We are working to reduce and recycle general waste at offices. Waste paper, which makes up a majority of waste at offices, continues to be sorted and collected since 1996. While the Group has long pushed for more paperless operations, efforts have ramped up since FY2020 with a significant increase in the proportion of electronic approvals for deskwork and a decrease in paper use in major meetings and other situations.

Furthermore, efforts are being made to recycle waste throughout the Group, including converting compost at the head office cafeteria to fertilizer and recycling waste oil generated from restaurants, bakeries, and accommodation facilities operated by Group companies into biofuel.

Water Risk Measures (Water Security)

Evaluating the effects of water stress

The Toho Gas Group uses water resources for a variety of applications including vaporizing LNG, recognizes the importance of effective water utilization, and evaluates the water stress and impact of the risk. We conduct annual evaluations of water stress each year using the Aqueduct Global Water Risk Atlas developed by the World Resources Institute (WRI), and we confirmed that the areas where our Group's main offices and plants are located are not areas of high water stress.



Taken from the Aqueduct Water Risk Atlas

Compliance with regulatory standards

In FY2023, we complied appropriately with water regulations and agreements, and did not experience any accidents or violations that significantly impacted the environment.

Regarding seawater used as a heat source to vaporize LNG at city gas plants, we design production facilities to maintain the temperature difference between collected and discharged water within a certain range to reduce the impact on the ecosystem.

Management of water usage and wastewater volume

We assess the amount of drinking water, industrial water, and well water used at all offices, and work to conserve water. We also assess the amount of wastewater discharged by location and manage the quality of the wastewater in accordance with laws and regulations as well as local government ordinances.