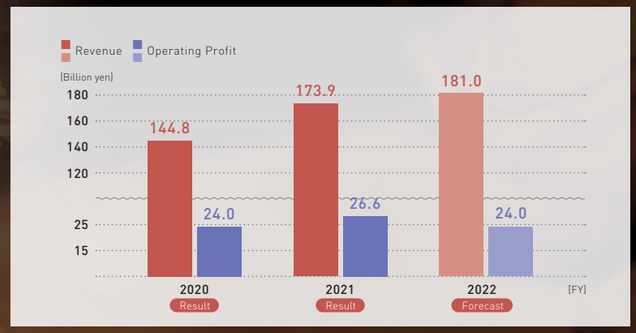
Precious Metals Business

The Group collects and recycles scrap containing precious metals from various sectors.
By recovering and providing gold, silver, platinum, palladium and other precious metals indispensable to modern manufacturing, we are contributing to the effective utilization of resources and the development of industry.

Market Conditions

As geopolitical risks, increased resource costs, and concerns about inflation continue to surface, the expectations with regard to precious metals recycling have only become higher. There is also increased interest in "supplying precious metals in ways that are friendly to people, society, and the environment." The nature of recycling means that it is impacted by production trends and other factors in the industries that provide the materials, but we have been seeing a rise in materials collected in the jewelry and electronics sectors.



E-Scrap

Gold | Silver | Palladium

Electronic substrates used in personal computers, smartphones, and home appliances contain gold, silver, and palladium. We collect manufacturing process scrap and electronic substrates from used products. We then put them through various processes such as crushing and sorting to recover and recycle precious metals. Our precise sampling and advanced analysis techniques are just some of our strengths.

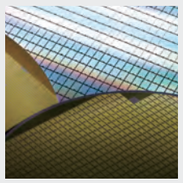
Catalysts

Palladium | Platinum | Rhodium

Automobiles are equipped with catalytic converters to detoxify harmful substances in exhaust gas, and precious metals such as palladium and platinum are used in these devices. We use our original technologies to recycle precious metals from automotive, chemical, and other catalysts.

Precision Cleaning

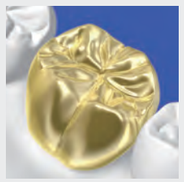
Gold | Silver | Platinum | Palladium



We strive to ensure the quality of equipment used by customers in their electronic component and semiconductor manufacturing processes by regularly and precisely cleaning them. Customers entrust us with their equipment parts, and we perform stripping and recovery of precious metals adhering to them. The recovered precious metals are returned to the customers upon request.

Dentistry

Gold | Silver | Platinum | Palladium



Gold-silver-palladium alloys are the main materials in dental prostheses such as crowns and inlays, and the percentage of precious metal content varies by type. Customers such as dental clinics and laboratories provide us with waste containing these metals and we recycle them. We offer high-value recovery with our own system for integrated management of collection, assay, and reporting.

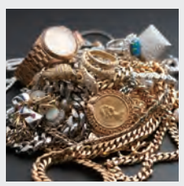
Plating Treatment

Gold | Silver | Palladium

Since precious metal plating is an excellent way to prevent corrosion and enhance electrical conductivity, it is used in various applications from industrial to decorative products. Utilizing a proprietary electrolytic precious metals recovery system, we recover and recycle the precious metals remaining in plating solutions. We also return the recovered materials to customers in the form of a precious metal compound of their request.

Jewelry

Gold | Silver | Platinum | Palladium



We collect and recycle precious metals from jewelry and ornaments that are no longer needed as well as precious metal scrap generated at each stage of the manufacturing process from purchasers, manufacturers, and processors. In addition to accurate analysis, we offer high-quality precious metal bullion products, while also returning raw materials to manufacturing and processing company customers.

Collecting and Recycling Precious Metals

We have deployed manufacturing operations in Japan and elsewhere in Asia that enable the most efficient recovery of precious metals and carry out optimal processing of recyclable materials depending on the different characteristics and admixtures in the business fields where we collect materials. Furthermore, we accurately meet customer needs by fully utilizing optimal methods and efficient refining facilities depending on the type of precious or rare metal.

Main Profit Drivers for the Precious Metals Recycling Business

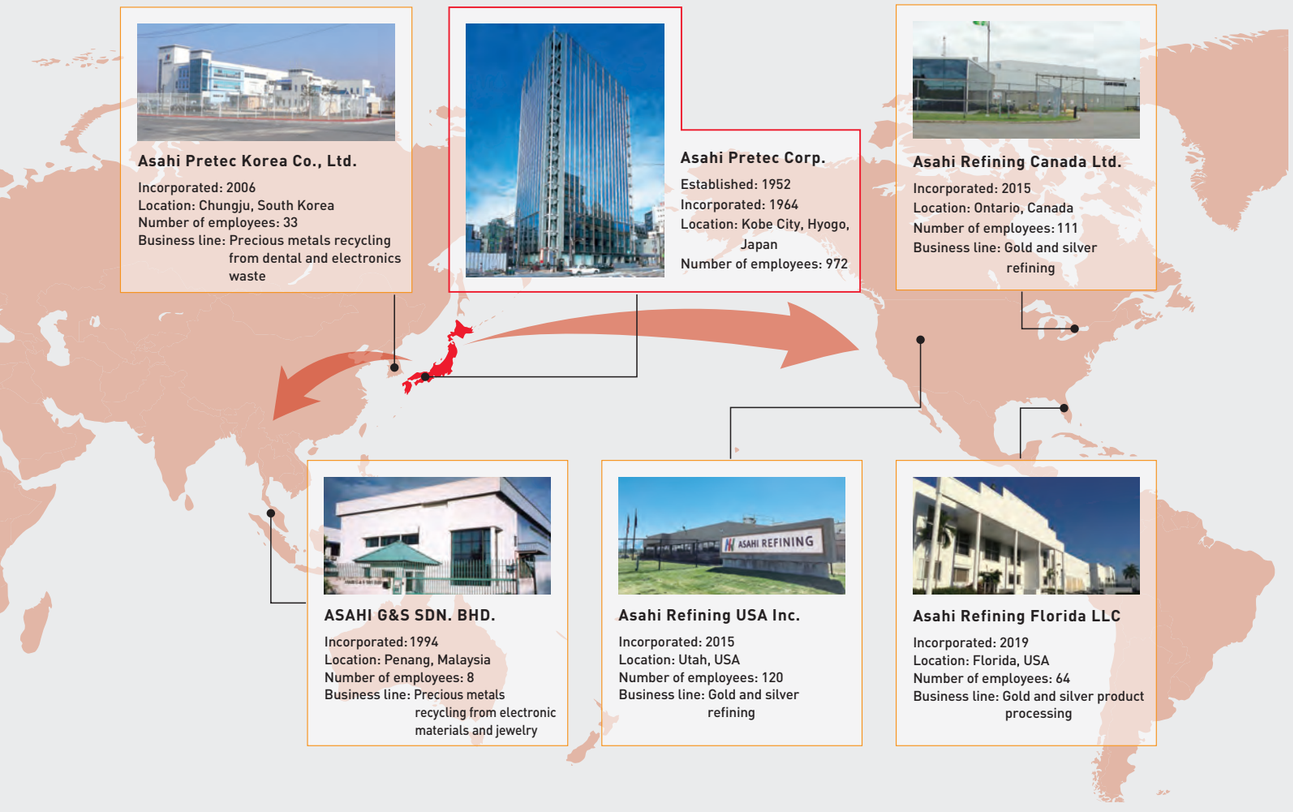
The main profit drivers are stable refining fees and income from yield differentials ("free metal").

Category	Profit Drivers	Impact on Profit
Precious metals recycling	Refining fees	● Refining fee income increases along with the amount of material collected. ● The unit price for refining fees is higher for materials that require difficult pre-processing. This means the average unit price rises along with the proportion of items that require difficult processing.
	Yield differential (difference between actual yield and contracted yield = "free metal")	● The volume of "free metal" expands when the actual yield climbs due to improvements in technical capabilities and processes. ● Income from "free metal" increases in line with rising market prices.

Precious Metals Business

Global Expansion

We have been expanding our precious metals recycling operations in Asia since 1994, focusing on dentistry and electronics waste. We have done this by developing business models tailored to local market conditions while utilizing the technology we have developed in Japan. Furthermore, with the addition of the Asahi Refining businesses to the Group in March 2015, we have expanded our operations to North America.



Asahi Pretec Korea Co., Ltd.
Incorporated: 2006
Location: Chungju, South Korea
Number of employees: 33
Business line: Precious metals recycling from dental and electronics waste

Asahi Pretec Corp.
Established: 1952
Incorporated: 1964
Location: Kobe City, Hyogo, Japan
Number of employees: 972

Asahi Refining Canada Ltd.
Incorporated: 2015
Location: Ontario, Canada
Number of employees: 111
Business line: Gold and silver refining

ASAHI G&S SDN. BHD.
Incorporated: 1994
Location: Penang, Malaysia
Number of employees: 8
Business line: Precious metals recycling from electronic materials and jewelry

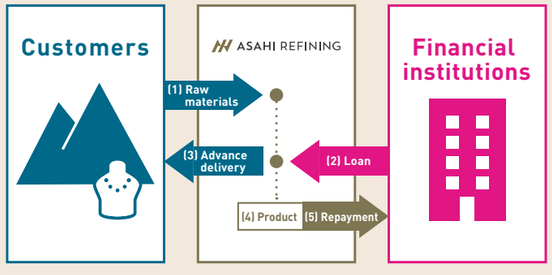
Asahi Refining USA Inc.
Incorporated: 2015
Location: Utah, USA
Number of employees: 120
Business line: Gold and silver refining

Asahi Refining Florida LLC
Incorporated: 2019
Location: Florida, USA
Number of employees: 64
Business line: Gold and silver product processing

(As of March 31, 2022)

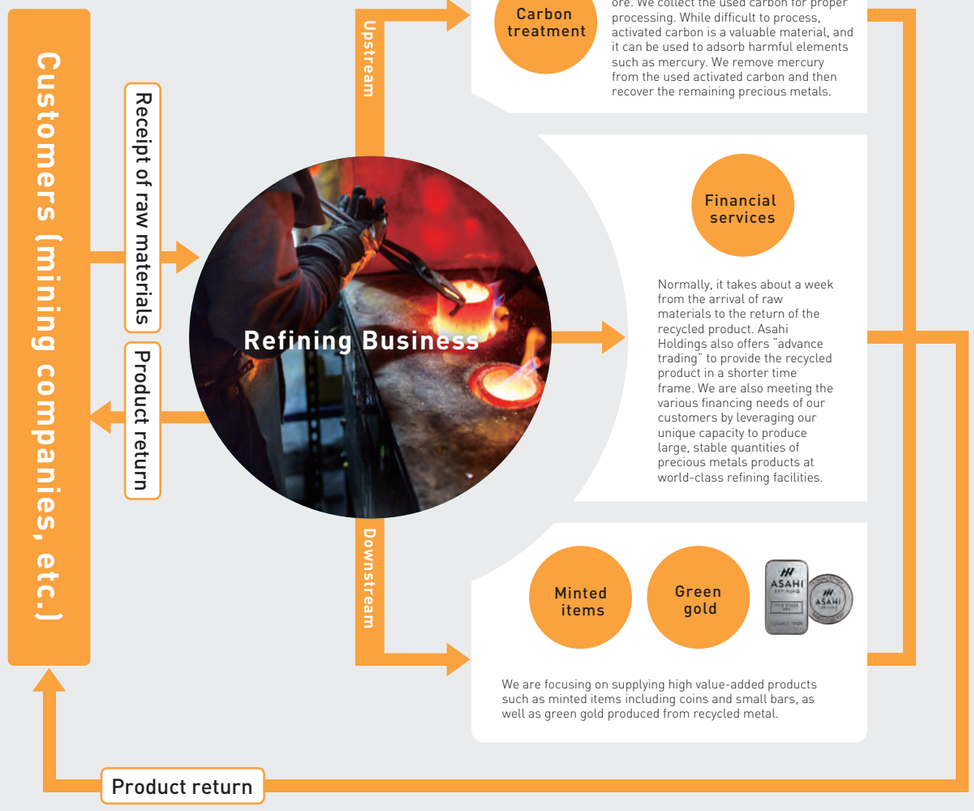
Representative Examples of North American Financial Services
Advance Trading

- Provides "advance trading" to shorten the time between receipt of raw materials and return of products
- Earn "interest based on the number of days of advance trading" from the customer by accepting the return of products before the contracted delivery date
- No risk of bad debts since advance trading is made after receipt of raw materials



North American Refining Business

In North America, we mainly refine gold and silver raw materials produced by mining companies, and we are proud of our refining volume, which is among the largest in the world. We also are striving to develop new services using our refining business as a platform, while responding to the diverse needs of our customers with financial services and high-value-added products.



Main Revenue Drivers for the Refining Business in North America

In addition to refining fees, which are a stable source of revenue, we are expanding related businesses by using refining as a platform, such as revenues from financial services and processed products.

Category	Profit Drivers	Impact on Profit
Refining business	Refining fees	● Refining fee income increases along with the volume of incoming raw materials (doré). ● The unit fee cost does not change over the short-term because contracts are long-term.
	Yield differential (difference between actual yield and contracted yield = "free metal")	● The volume of "free metal" expands when the actual yield climbs due to improvements in technical capabilities and processes. ● Income from "free metal" increases in line with rising market prices.
Related businesses	Financial revenue (advance trading, etc.)	● Income increases when interest rates rise in advance delivery contracts with mining companies. Income increases when the period of advance delivery is extended. ● Income increases when metal procurement costs fall, and the interest rate spread expands.
	Value-added product revenue (minted products, etc.)	● Income increases along with the market demand for value-added products. ● Income increases along with the brand value of our value-added products.

R&D System

Technical Research Center
Pursuing Original R&D

We conduct proprietary research and development and analytical technology improvement in the fields of recycling of precious metals and rare metals and detoxification and recycling of industrial waste. We established the Technical Research Center in Kobe High-Tech Park to serve as our R&D hub. We are looking to take even greater strides forward as a company that contributes to society by improving quality and technical innovation.

R&D

We anticipate the needs of our customers and strive to create new products and business by applying our large body of elemental technologies and developing new technologies.
● Technology for separating and refining precious and rare metals ● Environmental preservation and resource recycling technology ● Precious metals molding and refining technology

Refining Technology

In addition to wet precious metals refining technology, which is particularly effective for recycled material processing, the Group is developing dry precious metals refining technology effective for the primary raw material processing it is performing in North America. By advancing and combining both wet and dry refining technologies, we are creating effective precious metals refining techniques for handling all kinds of raw materials.

Release Technology

In order to collect precious metals adhered to the surfaces of parts and jigs, etc., used in the manufacture of electronic components and semiconductors, the Group is developing technology to chemically and physically exfoliate precious metals safely and reliably without damaging the parts and jigs.

Assay

The Asahi Holdings Group's core assay function supports a diverse range of corporate activities using the latest assay equipment and high-level assay technology. In addition, we play an important role in maintaining and enhancing trust with the Group's customers.
● Development of new assay technology ● Technical guidance for assay groups at each plant and sales office ● Purity assay of precious metals products ● Environmental analysis of issues such as plant wastewater discharges ● Environmental measurement certification

Assay Technology

The Group is developing assay techniques using X-ray and inductively coupled plasma (ICP) optical emission spectrometry with the aim of conducting rapid and accurate transactions with customers. We are upgrading our precious metals analysis at sites in and outside of Japan, including Asahi Refining.

Engineering

Using cutting-edge technology, experts from each sector design, produce, construct, and provide maintenance of facilities at subsidiaries in and outside Japan, helping to support safe and stable operation of the facilities.

● Design, production, construction, and maintenance of facilities and buildings
● Maintenance control of existing facilities
● Installation and maintenance of precious metals collection facilities for our customers
● Support for installation of robotics and IoT for equipment

Strengths and Responses to Potential Risks

Precious Metal Recycling Business

Strengths

(1) Ability to analyze the precious metal content of recycled materials
(2) A sales force of about 200 people all over the country who are customer-focused and well-versed in IT
(3) Production processing and distribution management that has obtained RJC certification and product quality that has obtained LBMA and LPPM certification

Responses to Risks

(1) Allocating resources to growing markets and new sectors
(2) Growing market share by utilizing proprietary systems in sectors with shrinking markets
(3) Strengthening competitiveness through enhanced production efficiency
(4) Improved green gold sales

Refining Business in North America

Strengths

(1) The largest refinery in North America as our refining platform
(2) Location close to client mining companies
(3) Our Group's credit worthiness and financing capacity

Responses to Risks

(1) Expansion of value-added services based on our refining platform
(2) Avoiding dependence on global supply chains

Solving Social Issues through Business Activities

Social issues relating to the Precious Metals Business

- Depletion of precious metal resources
- Environmental destruction during mining
- Human rights and labor issues related to mining
- Money laundering and terrorism financing risk

Contributing to the SDGs

Leveraging precious metals recycling to turn consumption into production, transforming waste into precious metal resources

Contributing to industrial sustainability by continually improving our highly efficient and high-quality precious metals recycling technologies

Helping to preserve terrestrial ecosystems, forests, and other land-based resources by expanding precious metals recycling, instead of mining

Promoting peaceful, inclusive societies by practicing responsible precious metals management and transparent procurement

Contributing to sustainable water use by practicing precious metals recycling without contaminant discharge

Helping to protect human rights and prevent child labor in high-risk regions such as conflict zones

Helping to prevent climate change by supplying recycled resources with low CO_2 emissions

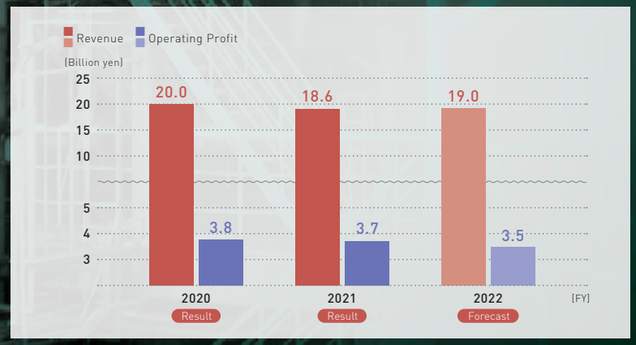
Promoting high levels of sustainability by collaborating with other companies

Environmental Preservation Business

The companies of the Asahi Holdings Group meet the diverse needs of their customers by leveraging the unique technologies they have developed over the decades in their respective sectors to detoxify and properly dispose of various waste materials.
As experts in waste disposal, we are helping to solve global environmental problems and playing a key role in building sustainable societies.

Market Conditions

Emissions from industrial waste have generally remained at a steady level in recent years. The market is said to be worth as much as five trillion yen, but even major players in the industry have not secured a large share of the market, which underscores how many companies there are in the market. Businesses are expected to evolve as society as a whole transitions towards carbon neutrality and digital transformation continues to spread.



Waste Reagents

The Group collects reagents for disposal from educational and research institutions. They are packed one by one for collection after confirming that they are stored in proper collection containers. Chemical content analysis is performed for any unidentified (poorly labeled) reagents to determine the appropriate processing method before disposal. Even small quantities of miscellaneous waste that are difficult to handle are also processed properly.

Waste Oil and Sludge

Based on analysis results, waste oils from plants are mixed and adjusted to achieve the optimal composition, before being recycled as alternative fuels. Meanwhile, sludge is recycled as raw material for cement after adjusting the content and moisture and then kneading. The aim is to ensure and maintain the quality of all recycled materials.

Medical Waste

We collect infectious waste and other waste materials generated by medical institutions. The collected medical waste is incinerated at our plant, and the waste residue is finally disposed of at a controlled final disposal site.

Wood Waste

Large amounts of scrap wood are generated by the demolition of buildings and other sites. We collect and shred this material into wood chips, which is used for fueling biomass power generation plants or for making particleboard.

Waste Fire-Proof Bricks

Fire-proof bricks are used as refractories to line glass furnaces, kilns, and incinerators. Waste fire-proof bricks generated by the demolishing of such facilities and periodic repair work are collected and carefully sorted. Recyclable items are reused as paving materials and fire-proof bricks.

Waste Acids, Alkalis, and Sludge (Inorganic/Organic)

Waste acids, alkalis, and sludge are generated by a wide range of industries, and they have a diverse range of properties, including inorganic and organic. Liquid waste is collected by a vacuum truck, subjected to neutralization and dewatering processes, then treated with microbes before being discharged into the public sewer system. The residual sludge is recycled as a raw material for refining or composting, etc.

Business Models for the Environmental Preservation Business

Asahi Holdings offers proper processing of waste from various industries, including detoxification and recycling of difficult-to-handle materials. In addition, we are developing consulting sales across Japan based on our multiple business models.

Business partners (plants, laboratories, hospitals, government offices, universities, high schools, etc.)

Customer consultation

ASAHI PRETEC

Providing a wide range of solutions that meet customer needs, from waste collection to transport and disposal

Collection, transport, and proper processing

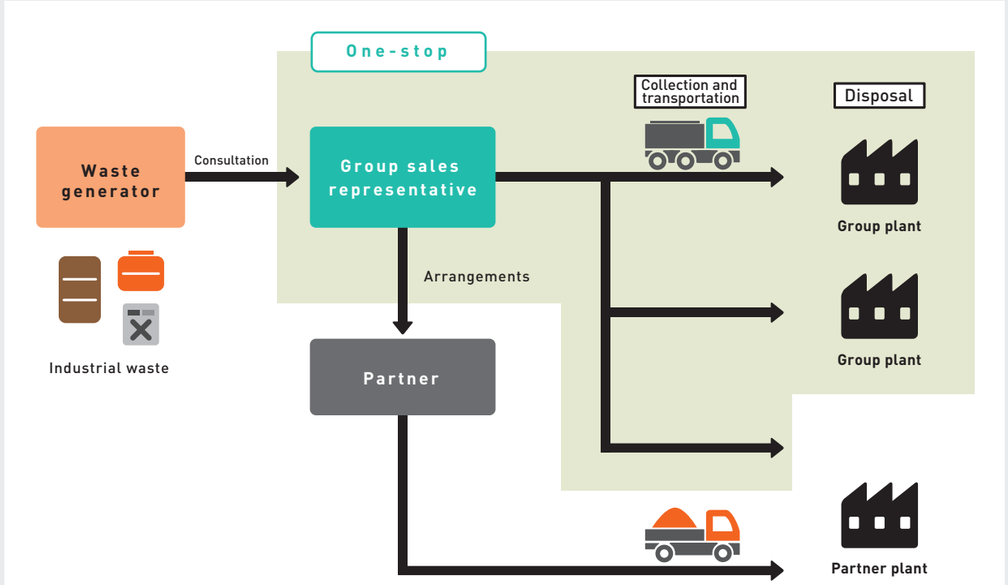
Effluent, waste oil, sludge, waste reagents, medical waste, waste fire-proof bricks, waste wood, etc.

Consulting

Proposals for best transportation and disposal methods for proper disposal

Providing a One-Stop Solution

The Asahi Holdings Group provides one-stop support for all inquiries regarding industrial waste disposal. We provide a wide range of solutions from collection and transportation to disposal through an experienced sales team that extends across our group network. We hold relevant licenses from authorities across Japan and can handle a wide variety of materials.



Industrial Waste Disposal and Recycling Processes

Collection and transportation → Intermediate treatment → Recycling / Landfill

■Industrial waste
18 articles including waste acids, waste alkalis, waste oil, sludge, waste plastics, etc.

■Specially controlled industrial waste
17 articles of hazardous waste, such as waste acids, waste alkalis, waste oil, and sludge, which contain specified toxic substances, and infectious waste

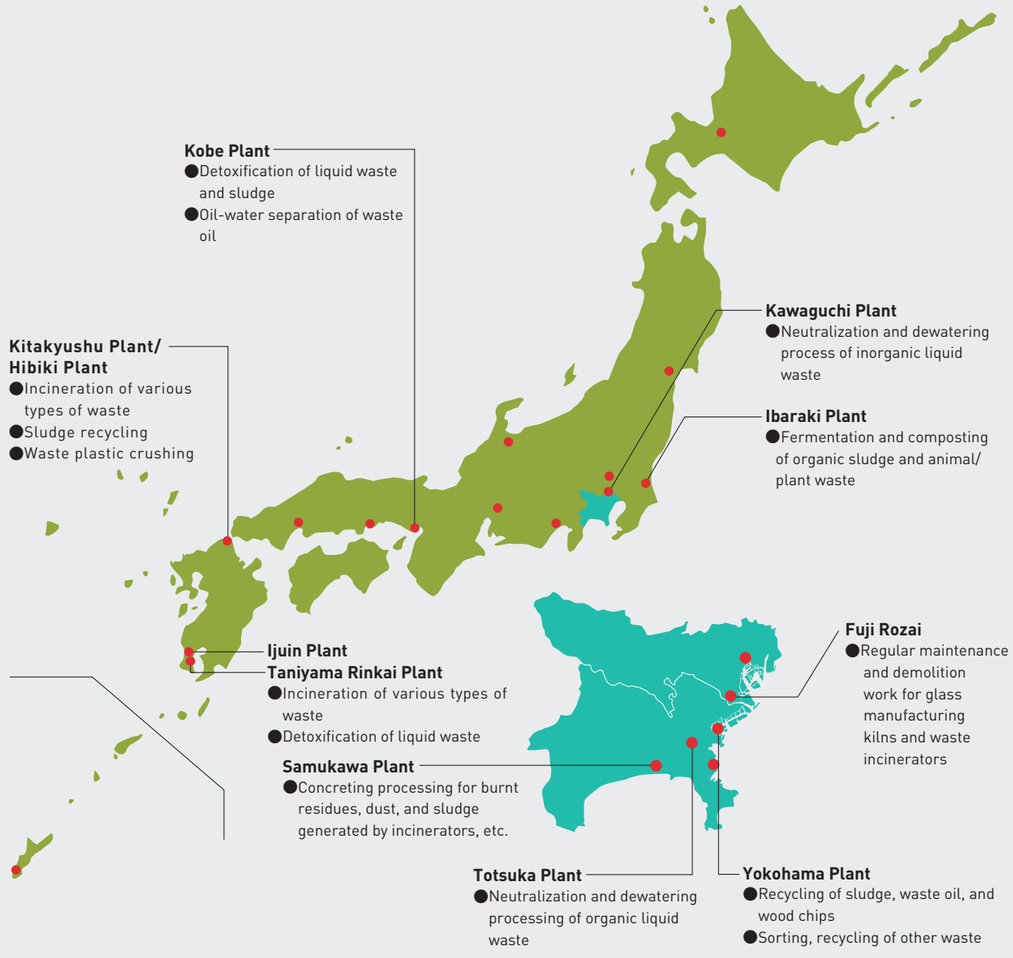
- ■Neutralization
- ■Incineration
- ■Condensation and precipitation
- ■Dewatering
- ■Cyanide decomposition
- ■Oil-water separation
- ■Neutralization, mixing
- ■Kneading
- ■Concreting
- ■Fermentation and composting
- ■Grading


Waste oil recycling facility, Asahi Pretec Yokohama Plant


Incineration facility, Asahi Pretec Kitakyushu Plant

Group Network

We have a system for swift and proper waste disposal based on the necessary licenses for collection, transportation, and intermediate treatment of most types of industrial waste and specially controlled industrial waste. In addition, our outstanding technology for detoxifying various waste materials offers optimal solutions for environmental preservation.



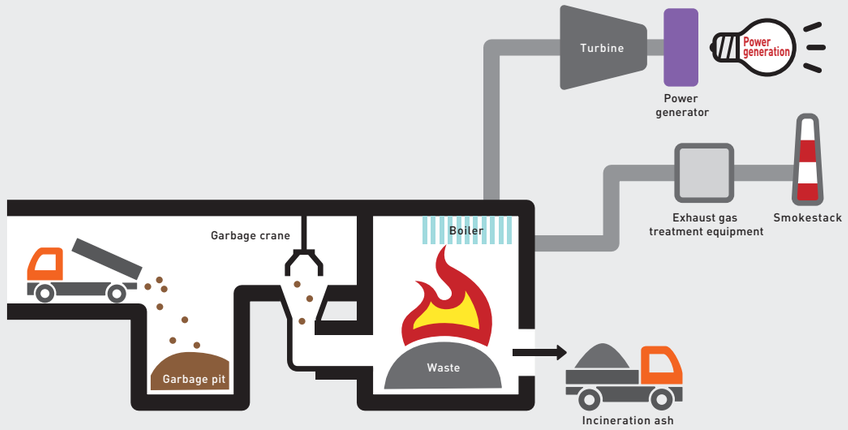
(As of June 1, 2022)

Licenses Acquired by the Group (as of June 1, 2022)

Industrial waste collection and transportation license	All prefectures, 9 government ordinance cities and core cities
Industrial waste disposal license	10 prefectures, 6 government ordinance cities and core cities
Specially controlled industrial waste collection and transportation license	All prefectures, 9 government ordinance cities and core cities
Specially controlled industrial waste disposal license	10 prefectures, 6 government ordinance cities and core cities
General waste	Kitakyushu City/Kagoshima City

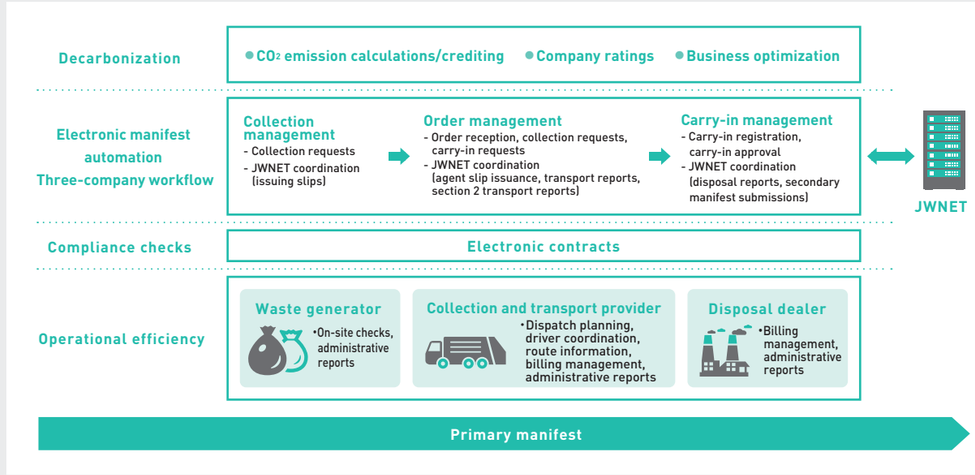
Generating Power from Waste

Waste-to-energy is a power generation method that uses the heat generated from waste incineration. It produces high temperatures and high-pressure steam to rotate turbines. By taking advantage of the energy released during waste incineration to produce electricity rather than simply incinerating the waste, the Group can reduce the amount of fuel used, thereby reducing CO_2 emissions. The Group constructed a waste-to-energy power plant in the city of Kitakyushu.
A portion of the construction funds were covered by the issuance of green bonds, which can only be used for projects that benefit the environment. The eligibility of these green bonds has undergone third-party evaluation by Rating and Investment Information, Inc. (R&I), which resulted in the highest R&I Green Bond Assessment rating of "GA1" being conferred. We will continue our efforts to properly dispose of waste and reduce CO_2 emissions as we transition to a decarbonized society.



Digital Transformation in the Environmental Preservation Business

The Group will leverage its industry-leading experience to provide a digital platform for solving issues in the industrial waste industry. Digital technology streamlines operations for businesses, from generation to treatment of industrial waste, allowing for waste-free business collaboration based on the electronic manifest. Through our digital platform, we will contribute to the creation of a sustainable society by streamlining operations and business collaboration, as well as making proper waste management easier.



Strengths and Responses to Potential Risks

Strengths

(1) Nationwide network (possession of licenses for collection and transportation of industrial waste in all 47 prefectures in Japan)

(2) A sales force of approximately 150 people well-versed in waste treatment and facilities

(3) A one-stop solution for industrial waste that utilizes our own facilities and those of our partners

(4) The technical capability to handle highly complex materials, such as chemicals with unknown contents

Responses to Risks

(1) Further expansion of company facilities, including the construction of processing facilities in the Kanto region, where demand is concentrated

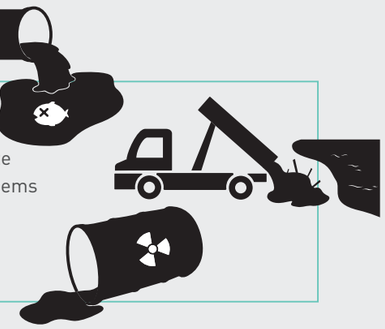
(2) Expanding consulting sales by leveraging our wealth of expertise

(3) Further promotion of businesses that contribute to decarbonization DX by taking a flexible approach to incorporating changes that push society toward carbon neutrality

Solving Social Issues through Business Activities

Social issues relating to the Environmental Preservation Business

- Contamination by hazardous waste
- Impact on land and ocean ecosystems
- Pollution of water resources



Contributing to the SDGs

Realizing a sustainable society by recycling and detoxifying waste

Ensuring the sustainability of water resources by detoxifying discharge such as waste acids and alkalis

Preventing marine pollution by properly treating liquid and plastic waste

Preventing pollution of land environments by detoxifying waste, and extending the lifespan of final disposal sites by promoting recycling

Advancing technological innovation from the standpoint of further improving efficiency in utilizing resources for various waste products, and promoting global sustainability

Achieving sustainable cities and other communities by properly managing waste

Helping to prevent climate change by reducing CO_2 emissions from waste-to-energy power generation

Promoting high levels of sustainability by collaborating with other companies

Asahi Holdings Materiality

Issues That Asahi Holdings Must Address

Business materiality

1 Expand Precious Metals Recycling

We will expand our precious metals recycling globally to promote more effective use of limited resources.

▶ P38, P41

Goals Total amount of recycled precious metals: **410 tons** in FY2030 (1.5 times FY2015)
Effective reduction of CO_2: **1.465 million tons** in FY2030 (1.5 times FY2015)

2 Supply Precious Metals in Ways That Are Friendly to People, Society, and the Environment

We will contribute to responsible management of precious metals by expanding the supply of precious metal products while protecting the environment and human rights. We will use precious metal-containing scrap and raw materials free from conflict minerals.

▶ P38, P46-47

3 Expand Proper Industrial Waste Disposal

We will strive to ensure proper treatment of waste as a waste disposal expert and work to help build a recycling-oriented society.

▶ P39

Goals Amount of properly disposed industrial waste:
500,000 tons in FY2030 (1.6 times FY2015)

4 Reduce CO_2 Emissions

We will work to reduce CO_2 emissions group-wide by implementing energy saving activities at each site, switching to next-generation vehicles, and switching to low CO_2 emission power plans.

▶ P39, P41-43

Goals Energy-derived CO_2 emissions:
-50% in FY2030 (compared to FY2015)

Human resource development and contribution to the SDGs

5 Enhance Work-Life Balance and Employee Diversity

We will strive to enhance job satisfaction by improving the system to help diverse human resources to succeed within the Group. This will be done by reforming working styles, implementing health and productivity management, and promoting diversity.

▶ P45

Goals Achievement rate for rest intervals of at least 11 hours: **100%** every year
Usage rate of Holidays for Refreshment (three consecutive days or more): **100%** every year
Percentage of women in managerial positions to all female employees: **Equal to men** by the end of FY2030
Percentage of employees with disabilities: **At least 2.5%** by the end of FY2030

6 Encourage and Support SDG-Related Activities

We will encourage and support employee activities outside the Group's main business areas that contribute to SDGs achievement, including individual and group volunteer activities. This initiative is called "Asahi Holdings SDGs Activities."

▶ P48

Focus

In April 2022, the Asahi Pretec Bando Plant, one of our priority sites for capital investment as laid out in The 9th Medium-Term Business Plan, began operations. This plant is the largest precious metals recycling plant in Asia and is outfitted with the latest technology and automated equipment to improve productivity and operational efficiency. The Saitama Plant, which has handled scrap from the dentistry and jewelry sectors, and the functions of the Manufacturing Section of the Technical Research Center, which handles the final products, have been consolidated at the Bando Plant, enabling one-stop production from the receipt of raw materials to the commercialization of products. At the Bando Plant, we have made a number of innovations based on our materiality.

Expand Precious Metals Recycling

At the Bando Plant, we have successfully reduced lead times by about 10% compared to conventional methods by introducing state-of-the-art equipment, automating operations that were previously done manually, and reviewing our production process. As a result, it became possible to increase the amount of precious metals being recycled even if throughput remains the same as before.

Supply Precious Metals in Ways That Are Friendly to People, Society, and the Environment

To further promote "Responsible Precious Metals Management," the Bando Plant has enhanced the traceability of each line.
In addition, NOx gas generated at the plant is absorbed into the liquid, and nitric acid is produced through a chemical reaction. The nitric acid produced is reused during the acid treatment process, which cuts costs and reduces the environmental impact.

Reduce CO_2 Emissions

The Bando Plant has implemented the following initiatives to reduce CO_2 emissions.

- By using high-efficiency air conditioning equipment and highly insulated walls throughout the plant, as well as utilizing solar power, the building received the highest rating of 5 stars under the Ministry of Land, Infrastructure, Transport and Tourism's Building-Housing Energy-efficiency Labeling System (BELS), in addition to ZEB Ready certification.
- The finishing processes for products that had previously been carried out at the Technical Research Center in Kobe were consolidated. This has cut down on transportation between sites.
- We reviewed the manufacturing process and made efforts to reduce the amount of chemicals used.