# 7.4 Pollution prevention and control

Under the ISO 14001 management system and PDCA continuous improvement concept, URECO's pollution prevention begins at the source and actively invests in reducing the consumption of raw materials and natural resources in order to reduce the use of pollutants. We continue to manage air pollution emissions, reduce effluent discharges, and reduce waste disposal, with the aim of balancing production and environmental protection.

## 7.4.1 Air pollution prevention and controlGRI 305-6, 305-7

The air pollutants that were discharged into the system after reduction and improvement from the process source are treated by high performance prevention equipment, and the emissions from each of our plants are in compliance with the regulations. No ozone-depleting substances (ODS) were generated (spread) during the manufacturing process.

### Gas Treatment System

Acid and alkali exhaust gas were processed by the exhaust gas treatment equipment (local scrubber) first according to the characteristics of the process exhaust gas, after which trace amounts of inorganic acid and alkali exhaust gas were discharged to the central exhaust gas scrubber for proper treatment before being released. The organic waste gas was pretreated by the system of condenser and oxidizer from the exhaust port at the machine end, and then emitted to the atmosphere after adsorption by activated carbon. The acid, alkaline, organic and hot exhaust systems of each plant are all designed with N+1 logic for backup operation, and the exhaust systems are all connected to emergency power supply and operate without fail in case of emergency, to ensure stable operation of the exhaust system, emission standards and smooth production operation.

### Continuous monitoring

All systems are connected to the monitoring system, and the 24-hour shift staff is in control of the real-time operation status. When the operating parameters drift, an alarm is sent out for immediate action to ensure the quality of the emitted air.

### Air pollution inspection

URECO rigorously monitors exhaust emissions, ensuring that all process-generated emissions undergo treatment before release into the atmosphere. Since SOx and NOx are not included in the operating permit for fixed sources, regular monitoring is not required. At the same time, in response to the requirements of local competent authorities, there are certain regulations on the frequency of air pollutant inspection items, which are indeed implemented by each plant. Random checks of emission outlets consistently meet air quality standards. The results of air pollutant emission inspection at each plant are summarized as follows:

#### Hsinchu Science Park plant

| Chimney | Inspection Item | Inspection Method | Inspection Frequency | 2021 | 2022 | 2023 | Emission Standard (ppm) |
|---|---|---|---|---|---|---|---|
| P002 | VOCs | NIEA A723.75B | Before the permit extension (1 out of 3 operation) | - | 19 | - | - |
| P003 | | | | - | 5 | - | - |
| P006 | | | | - | 5 | - | - |

Note 1: Due to the lifting of the air pollution inspection at Hsinchu Science Park, there are no testing data available for the year 2023.

## Zhunan Plant

| Chimney | Inspection Item | Inspection Method | Inspection Frequency | 2021 | 2022 | Emission Standard (Kg/hr) | 2023 | Emission Standard (ppm) |
|---|---|---|---|---|---|---|---|---|
| P101 | Particulate pollutants | NIEA A101.77C | Year 2021 Before permit extension<br>Year 2022 3 out of 5 operation<br>Year 2023 4 out of 5 operation | - | - | 100 (mg/Nm$^3$) | 5*10$^{-2}$ | 100 (mg/Nm$^3$) |
| | Ammonia gas | NIEA A408.72B | | - | - | 1.215 (g/s) | 8.88*10$^{-2}$ | 1.215 (g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | - | - | 0.6 | 0.0645 | 0.5 |
| | Hydrochloric acid | | | - | - | 0.6 | 0.0397 | 0.5 |
| | Nitric acid | | | - | - | 0.6 | 0.00595 | 0.5 |
| | Sulfuric acid | | | - | - | 0.1 | 0.00521 | 0.5 |
| | Phosphoric acid | | | - | - | 0.6 | 0.00445 | 0.5 |
| | VOCs | NIEA A723.75B | | - | - | - | 2 | 14 |
| P102 | Particulate pollutants | NIEA A101.77C | | - | - | 100 (mg/Nm$^3$) | 3*10$^{-2}$ | 100 (mg/Nm$^3$) |
| | Ammonia gas | NIEA A408.72B | | - | - | 1.215 (g/s) | 6.20*10$^{-3}$ | 1.215 (g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | - | - | 0.6 | 0.0239 | 0.5 |
| | Hydrochloric acid | | | - | - | 0.6 | 0.0662 | 0.5 |
| | Nitric acid | | | - | - | 0.6 | 0.0557 | 0.5 |
| | Sulfuric acid | | | - | - | 0.1 | 0.0082 | 0.5 |
| | Phosphoric acid | | | - | - | 0.6 | 0.00625 | 0.5 |
| | VOCs | NIEA A723.75B | | - | - | - | 2 | 14 |
| P103 | Particulate pollutants | NIEA A101.77C | | - | 2.81*10$^{-2}$ | 100 (mg/Nm$^3$) | 3*10$^{-2}$ | 100 (mg/Nm$^3$) |
| | Ammonia gas | NIEA A408.72B | | - | 3.68*10$^{-2}$ | 1.215 (g/s) | 3.80*10$^{-3}$ | 1.215 (g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | - | 5.15*10$^{-3}$ | 0.6 | 0.0082 | 0.5 |
| | Hydrochloric acid | | | - | 1.77*10$^{-3}$ | 0.6 | 0.035 | 0.5 |
| | Nitric acid | | | - | 6.03*10-3 | 0.6 | 0.00742 | 0.5 |
| | Sulfuric acid | | | - | *Note1 | | 0.00845 | 0.5 |
| | Phosphoric acid | | | - | 3.46*10$^{-4}$ | 0.6 | 0.00722 | 0.5 |
| | VOCs | NIEA A723.75B | | - | - | - | 2 | 14 |
| P104 | Particulate pollutants | NIEA A101.77C | | - | 2.59*10$^{-2}$ | 100 (mg/Nm$^3$) | 4*10$^{-2}$ | 100 (mg/Nm$^3$) |
| | Ammonia gas | NIEA A408.72B | | - | 9.70*10$^{-3}$ | 1.215 (g/s) | 9.50*10$^{-3}$ | 1.215 (g/s) |
| | Hydrofluoric acid | A452.73B | | - | 1.06*10$^{-3}$ | 0.6 | 0.0281 | 0.5 |
| | Hydrochloric acid | | | - | 1.47*10$^{-3}$ | 0.6 | 0.0285 | 0.5 |

| Chimney | Inspection Item | Inspection Method | Inspection Frequency | 2021 | 2022 | Emission Standard (Kg/hr) | 2023 | Emission Standard (ppm) |
|---|---|---|---|---|---|---|---|---|
| P104 | Nitric acid | A452.73B | Year 2021 Before permit extension<br>Year 2022 3 out of 5 operation<br>Year 2023 4 out of 5 operation | - | $1.13*10^{-2}$ | 0.6 | 0.00777 | 0.5 |
| | Sulfuric acid | | | | *Note1 | | 0.00373 | 0.5 |
| | Phosphoric acid | | | - | $2.09*10^{-4}$ | 0.6 | 0.00319 | 0.5 |
| | VOCs | NIEA A723.75B | | - | - | - | 2 | 14 |
| P105 | Particulate pollutants | NIEA A101.77C | | - | $2.83*10^{-2}$ | 100 ($mg/Nm^3$) | $4*10^{-2}$ | 100 ($mg/Nm^3$) |
| | Ammonia gas | NIEA A408.72B | | - | $1.88*10^{-2}$ | 1.215 (g/s) | $7.12*10^{-2}$ | 1.215 (g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | - | $2.44*10^{-3}$ | 0.6 | 0.00973 | 0.5 |
| | Hydrochloric acid | | | - | $5.35*10^{-3}$ | 0.6 | 0.0523 | 0.5 |
| | Nitric acid | | | - | $2.00*10^{-2}$ | 0.6 | 0.019 | 0.5 |
| | Sulfuric acid | | | | *Note1 | | 0.00686 | 0.5 |
| | Phosphoric acid | | | - | $4.16*10^{-4}$ | 0.6 | 0.0058 | 0.5 |
| | VOCs | NIEA A723.75B | | - | - | - | 2 | 14 |
| P201 | VOCs | NIEA A723.75B | Annually (2 out of 4 operation) | - | - | - | 9 | 14 |
| P202 | | | | - | - | - | 3 | 14 |
| P203 | | | | - | 0.15 | 0.6 | 3 | 14 |
| P204 | | | | | 0.15 | 0.6 | 4 | 14 |

Note 1: Raw materials were not utilized in 2022.
Note 2: Amended on May 4, 2023, "Air Pollution Control and Emission Standards for the Semiconductor Industry."

## Tainan Plant

| Chimney | Inspection Item | Inspection Method | Inspection Frequency | 2021 | 2022 | Emission Standard (Kg/hr) | 2023 | Emission Standard (ppm) |
|---|---|---|---|---|---|---|---|---|
| P101 | Ammonia gas | NIEA A408.72B | Before the permit extension (4 out of 5 operation) | ND | - | 2.6(g/s) | $7.66*10^{-3}$ | 2.6(g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | $1.95*10^{-3}$ | - | 0.6 | $<4.37*10^{-3}$ | 0.5 |
| | Hydrochloric acid | | | $2.13*10^{-3}$ | - | 0.6 | $1.23*10^{-2}$ | 0.5 |
| | Nitric acid | | | $1.45*10^{-2}$ | - | 0.6 | $4.98*10^{-3}$ | 0.5 |
| | Sulfuric acid | | | $1.08*10^{-3}$ | - | 0.1 | $1.60*10^{-3}$ | 0.5 |
| | Phosphoric acid | | | $9.74*10^{-5}$ | - | 0.6 | $<8.23*10^{-4}$ | 0.5 |
| P102 | Ammonia gas | NIEA A408.72B | | ND | - | 2.6(g/s) | 0.01 | 2.6(g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | $4.56*10^{-3}$ | - | 0.6 | 0.02 | 0.5 |
| | Hydrochloric acid | | | $3.57*10^{-3}$ | - | 0.6 | 0.02 | 0.5 |
| | Nitric acid | | | $1.39*10^{-2}$ | - | 0.6 | 0.01 | 0.5 |
| | Sulfuric acid | | | $2.87*10^{-3}$ | - | 0.1 | 0.05 | 0.5 |
| | Phosphoric acid | | | $<1.61*10^{-4}$ | - | 0.6 | 0.01 | 0.5 |
| P103 | Ammonia gas | NIEA A408.72B | | ND | - | 2.6(g/s) | 0.01 | 2.6(g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | $1.08*10^{-2}$ | - | 0.6 | $<4.37*10^{-3}$ | 0.5 |
| | Hydrochloric acid | | | $4.46*10^{-3}$ | - | 0.6 | $9.83*10^{-3}$ | 0.5 |
| | Nitric acid | | | $1.72*10^{-2}$ | - | 0.6 | $4.62*10^{-3}$ | 0.5 |
| | Sulfuric acid | | | $1.48*10^{-3}$ | - | 0.1 | $1.60*10^{-3}$ | 0.5 |
| | Phosphoric acid | | | $<1.20*10^{-4}$ | - | 0.6 | $<8.23*10^{-4}$ | 0.5 |
| P104 | Ammonia gas | NIEA A408.72B | | ND | - | 2.6(g/s) | 0.01 | 2.6(g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | $8.35*10^{-4}$ | - | 0.6 | 0.02 | 0.5 |
| | Hydrochloric acid | | | $1.80*10^{-3}$ | - | 0.6 | 0.03 | 0.5 |
| | Nitric acid | | | $1.43*10^{-3}$ | - | 0.6 | 0.01 | 0.5 |
| | Sulfuric acid | | | $4.27*10^{-4}$ | - | 0.1 | 0.005 | 0.5 |
| | Phosphoric acid | | | $<6.01*10^{-5}$ | - | 0.6 | 0.004 | 0.5 |
| P105 | Ammonia gas | NIEA A408.72B | | $5*10^{-3}$ | - | 2.6(g/s) | 0.01 | 2.6(g/s) |
| | Hydrofluoric acid | NIEA A452.74B | | $2.59*10^{-3}$ | - | 0.6 | 0.02 | 0.5 |
| | Hydrochloric acid | | | $3.97*10^{-3}$ | - | 0.6 | 0.01 | 0.5 |
| | Nitric acid | | | $1.13*10^{-2}$ | - | 0.6 | 0.005 | 0.5 |
| | Sulfuric acid | | | $1.07*10^{-3}$ | - | 0.1 | <0.001 | 0.5 |
| | Phosphoric acid | | | $<1.45*10^{-4}$ | - | 0.6 | <0.001 | 0.5 |

| Chimney | Inspection Item | Inspection Method | Inspection Frequency | 2021 | 2022 | Emission Standard (Kg/hr) | 2023 | Emission Standard (ppm) |
|---|---|---|---|---|---|---|---|---|
| P201 | VOCs | NIEA A723.75B | Annually | 0.04 | - | 0.6 | - | 14 |
| P202 | | | | 0.03 | 0.04 | 0.6 | 2 | 14 |
| P203 | | | | 0.03 | 0.02 | 0.6 | 2 | 14 |
| P204 | | | | 0.02 | 0.02 | 0.6 | 2 | 14 |
| P205 | | | | 0.04 | - | 0.6 | - | 14 |
| P206 | | | | 0.03 | 0.02 | 0.6 | 2 | 14 |
| P301 | VOCs | NIEA A723.75B | Before the permit extension (1 out of 2 operation) | - | 0.11 | - | 10 | - |
| P302 | | | | - | 0.09 | - | 8 | - |

Note 1: In 2022, P201 and P205 were removed, and P301 and P302 were added.

Note 2: Amended "Air Pollution Control and Emission Standards for Semiconductor Industry" on May 4, 2023

## 7.4.2 Water Pollution Prevention and Control GRI 303-2, 303-4

URECO's water pollution prevention and control system at each plant is operated in accordance with SOPs and maintenance procedures. The discharging terminal is equipped with an on-line monitoring system, so that in case of abnormal conditions, in addition to controlling the backflow control by the system, the operators can also immediately activate the emergency response process to halt the discharge to prevent environmental pollution before it happens.

### Water quality inspection of wastewater discharge

The wastewater from URECO's production process is pre-treated to meet the required standards before it is discharged to the Science Park or industrial area wastewater plants. In order to monitor the water quality of the effluent in real time, a continuous water quality and volume monitoring system has been installed before discharge to ensure that the regulated wastewater meets the standards. In 2022, the competent authorities conducted random water quality inspections at the discharge ports from time to time, all of which were in compliance with the regulations, and also regularly outsourced the collection of samples for monitoring and analysis, in order to strictly control the discharge of wastewater. The water volume and water quality monitoring results of each plant are summarized as follows:

Unit: 1,000 Cubic Meters

| Plant | 2021 | 2022 | 2023 | Waste Water Processing Unit |
|---|---|---|---|---|
| Hsinchu Science and Industrial Park plant | 27.05 | 11.39 | 6.07 | Hsinchu Science Park Bureau Wastewater Treatment Plant |
| Zhunan plant | 183.17 | 225.22 | 58.15 | Zhunan Science Park Bureau Wastewater Treatment Plant |
| Tainan plant | 317.03 | 285.93 | 177.22 | Tainan Technology Industrial Park Service Center Wastewater Treatment Plant |

Note 1: TWastewater discharge volume for Hsinchu Science Park and Zhunan Plant is based on wastewater flow statistics; for Tainan Plant, it is based on 80% of industrial service center tap water consumption.

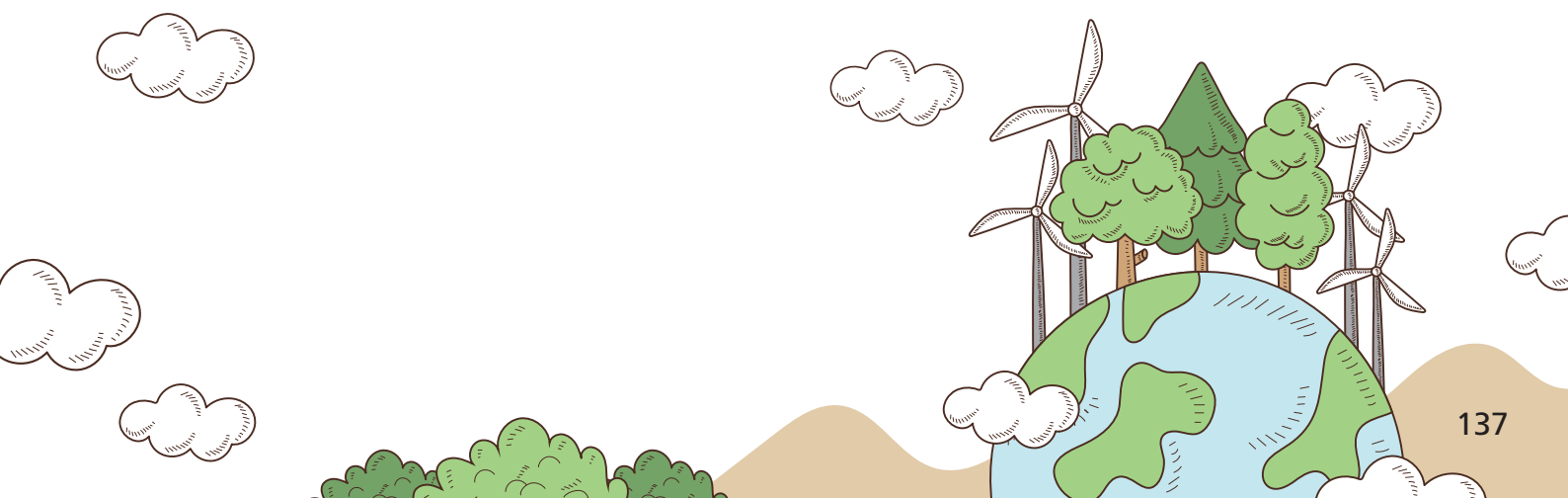
## Water quality monitoring results for each plant area

Wastewater generated from URECO's manufacturing process undergoes regular outsourced sampling, monitoring, and analysis. For 2023, the semi-annual testing results are primarily considered, and the wastewater testing results from each plant area are compiled as follows:

| Hsinchu Science Park plant | | | | | |
|---|---|---|---|---|---|
| Inspection Item | Inspection Standards | 2021 | 2022 | 2023 | Regulated Standards |
| pH | NIEA-W424.52A | 7.15 | 8.1 | - | 5-9 |
| Temperature(°C) | NIEA-W217.51A | 24.2 | 25.7 | - | 35 |
| Suspended solids(mg/L) | NIEA-W210.58A | 80.64 | 16.5 | - | 300 |
| Chemical oxygen demand (mg/L) | NIEA-W517.52B | 83.8 | 21.9 | - | 500 |
| Fluoride(mg/L) | NIEA-W413.52A | 4.6 | 0.4 | - | 15 |

| Zhunan plant | | | | | |
|---|---|---|---|---|---|
| Inspection Item | Inspection Standards | 2021 | 2022 | 2023 | Regulated Standards |
| pH | NIEA-W424.52A | 7.9 | 8 | 7.6 | 5~9 |
| Temperature(°C) | NIEA-W217.51A | 24.0 | 24.5 | 24.1 | <35 |
| Suspended solids(mg/L) | NIEA-W210.58A | 24.8 | 5 | 11 | <300 |
| Chemical oxygen demand (mg/L) | NIEA-W517.52B | 11.5 | 9.8 | 37.7 | <500 |
| Fluoride(mg/L) | NIEA-W413.52A | 4.46 | 2.26 | 2.9 | <15 |

| Tainan plant | | | | | |
|---|---|---|---|---|---|
| Inspection Item | Inspection Standards | 2021 | 2022 | 2023 | Regulated Standards |
| pH | NIEA-W424.52A | 6.7 | 7.8 | 7.3 | 5-9 |
| Temperature(°C) | NIEA-W217.51A | 28.9 | 28.3 | 27.7 | <42 |
| Suspended solids(mg/L) | NIEA-W210.58A | 34.9 | 11.1 | 2.5 | 320 |
| Chemical oxygen demand (mg/L) | NIEA-W517.52B | 25.2 | 50.8 | 11.1 | 520 |
| Fluoride(mg/L) | NIEA-W413.52A | 9.8 | 1.85 | 4.16 | 15 |



## 7.4.3 Waste Management GRI 306-1 ~ 306-5

URECO's waste management is based on compliance with laws and regulations. In addition to source reduction, URECO also promotes recycling to increase the proportion of recycled waste.

### Waste Source Management

Waste is generally divided into two major categories: employee household waste and process waste:

- Employee waste management: Through employee education and training and poster promotion, we promote waste reduction and sorting management so that recyclable resources can be recycled and reused.
- Process waste management: Continue to reduce the amount of hazardous waste generated and improve reuse efforts

### Effectiveness of waste management

Sources of waste from URECO process include fluorine-containing waste liquids, inorganic sludge, acid-alkali wiping cloths, silver-aluminum wiping cloths, empty barrels (tanks), waste optoelectronic components, waste silicone gel, waste activated carbon, waste wooden pallets, etc. URECO has established a waste management policy that requires separate storage, labeling, and no mixing with other miscellaneous items according to the nature of the waste, a written contract to be completed prior to disposal, a legal organization to clean up the waste, and regular audits by the cleanup service provider. In accordance with regulatory compliance and reduced cleanup costs, URECO's waste management principles prioritize reuse of resources to achieve maximum environmental benefits through effective reuse of resources. In 2023, the reuse rates for general and hazardous waste in URECO both exceeded 90%. Among general waste, 65.14% is reused as raw materials and 34.86% as materials or additives. Among hazardous waste, 56.75% is reused as raw materials and 43.25% as materials or additives.

#### Take Waste Management in 2023 as an Example

URECO has established a selection mechanism for waste cleaning contractors to achieve sustainable resource utilization and ensure proper waste handling. In 2023, 25 audit firms audited the contractors, identifying 30 non-compliance issues related to environmental and occupational safety. These included lack of records for pollution control equipment, on-site dust dispersion, inadequate use of personal protective equipment by onsite personnel, excessive stacking of stored materials, incomplete site labeling, improper handling of waste not covered by permits, and incomplete records related to operating equipment. URECO requires immediate improvements from contractors regarding these issues and will only continue cooperation with those who demonstrate compliance.

In response to these findings, URECO not only requires waste cleaning contractors to provide plans for improvement but also offers management systems and shares implementation experiences for their reference.

The waste generation and disposal for the last three years are summarized as follows:

**In 2023, a total of 25 companies underwent audits.**

**There were 30 non-compliance issues related to environmental and occupational safety.**

**All improvements were completed within the specified timeframe.**

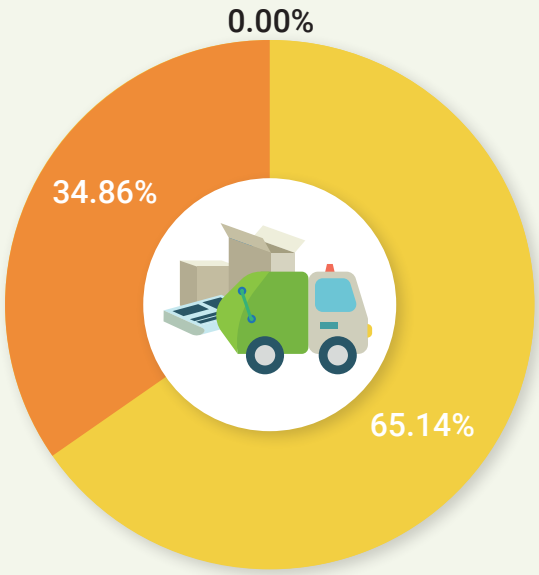
## Total amount of waste at each plant

Unit: ton

| Year | | 2021 | 2022 | 2023 |
|---|---|---|---|---|
| Total waste | | 3,413.5 | 3,766.4 | 2,138.4 |
| Hazardous business waste | Reuse | 1,667.2 | 1,256.3 | 541.4 |
| | Buried | 0 | 0 | 16.3 |
| | Incinerated | 0 | 0.8 | 1.4 |
| | Other(Note 1) | 161.0 | 95.4 | 9.5 |
| Total | | 1,828.2 | 1,352.4 | 568.6 |
| General business waste | Reuse | 1,371.3 | 2,202.1 | 1,447.3 |
| | Buried | 6.9 | 3.0 | 10.8 |
| | Incinerated | 142.3 | 155.4 | 101.1 |
| | Other(Note 1) | 64.8 | 53.5 | 10.6 |
| Total | | 1,585.3 | 2,414.0 | 1,569.9 |

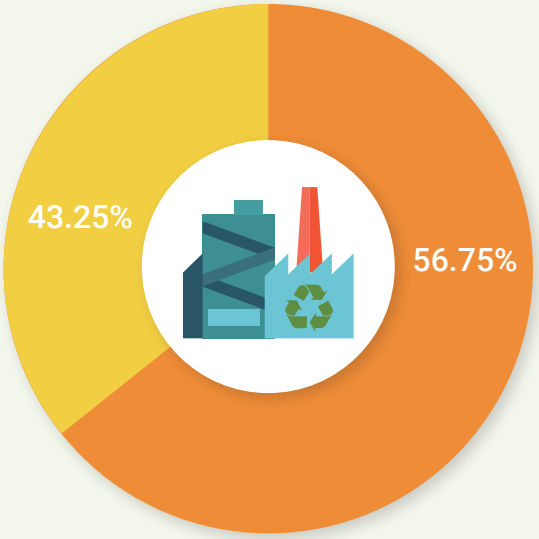
Note 1: Other disposal methods include non-reuse, burial, and incineration.
Note 2: Hsinchu Science Park plant stop manufacturing in April 2023, therefore no relevant data were disclosed in 2023

## Categories for reuse of waste in each plant




Classification of General Business Waste Reuse

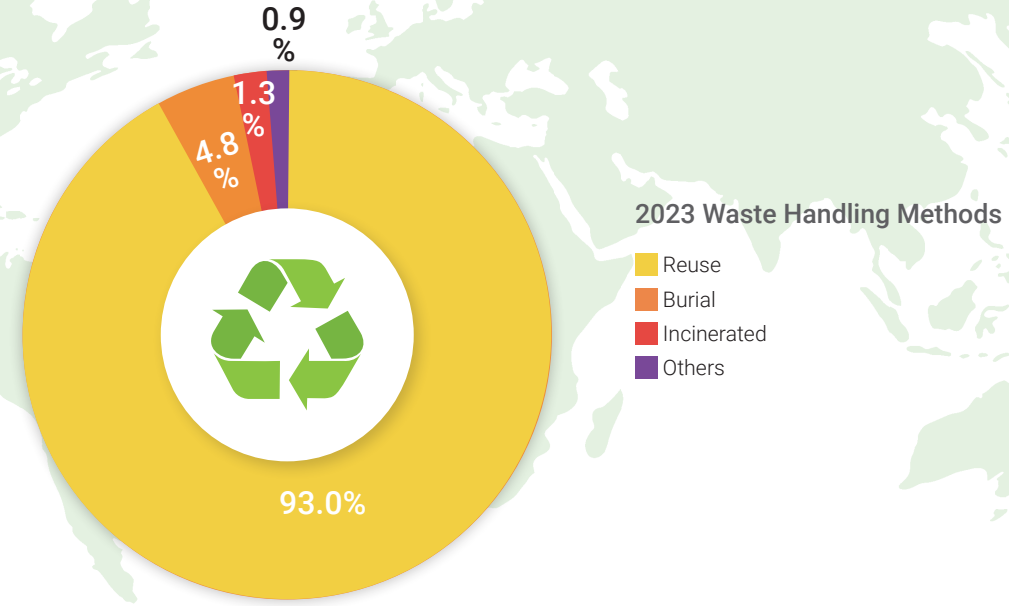
- Use of waste as recycled raw materials
- Use of waste as recycled materials and additives
- For other reuse purposes

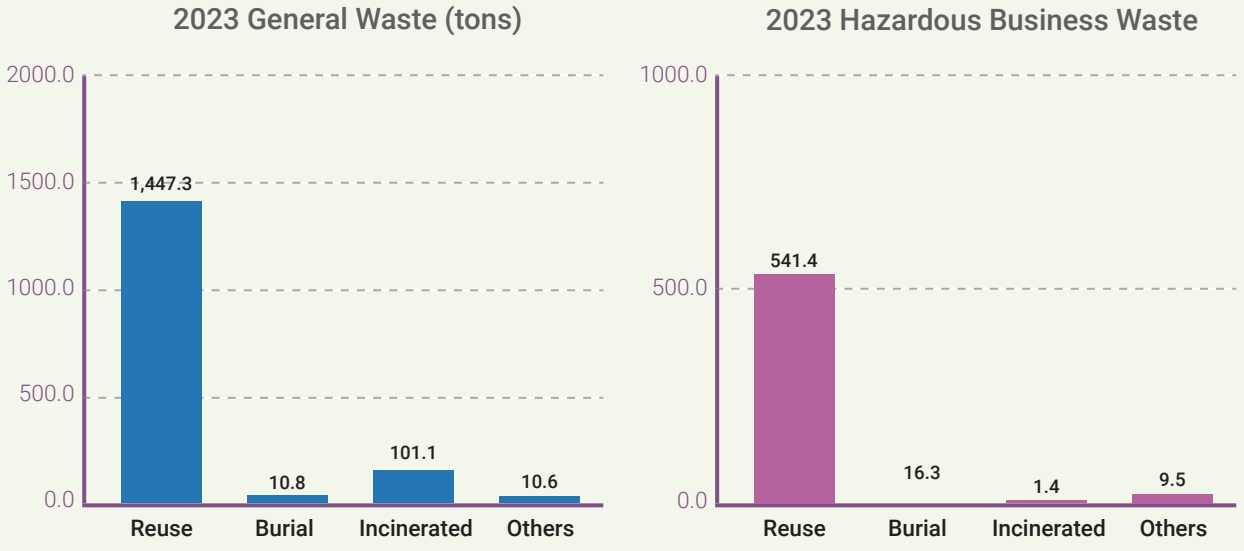



Classification of Hazardous Business Waste Reuse

- Use of waste as recycled raw materials
- Use of waste as recycled materials and additives

## The ratio of waste type and handling method in Taiwan plants



# 7.5 Greenhouse Gas Management

The solar energy industry has arisen in response to greenhouse gas emissions and global warming. In 2023, URECO's Taiwan operations produced solar photovoltaic products capable of generating 12.57 billion kilowatt-hours annually, based on an average of four hours of effective sunlight (1,000W/M2) per day. This production helps to mitigate the environmental impact of climate change by offsetting 622,237 tons of carbon dioxide emissions, which is roughly equivalent to the carbon sequestration capacity of 1,610 Daan Forest Parks in one year.

## 7.5.1 Greenhouse Gas Inventory GRI 305-1~4

URECO conducts an annual inventory of greenhouse gas emissions from each plant on its own, in order to grasp the current situation and set targets for reduction effectiveness. The continuous implementation of the inventory reveals the determination of green energy companies. According to the ISO 14064-1 standard, through the greenhouse gas inventory process and results, we are able to grasp the greenhouse gas emissions, and we hope that we can devote ourselves to greenhouse gas reduction in the future, so that we can fulfill our responsibility as a member of the earth village to reduce the trend of global warming. This report compiles the greenhouse gas emission equivalents for the past three years as follows:

| Year | | | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Scope 1 | Type 1 | Emission | 317 | 2,077.3673 | 1,182.4803 |
| Scope 2 | Type 2 | Emission | 65,230 | 62,240.3972 | 41,774.5072 |
| Scope 3 | Type 3 | Emission | - | 949.6286 | 966.7468 |
| | Type 4 | Emission | - | 10,859.5473 | 8,252.0064 |
| | Type 5 | Emission | - | - | - |
| | Type 5 | Emission | - | - | - |
| Bio Energy | | | 0 | 0 | 0 |
| Total emissions (metric tons $CO_2e$/year) | | | 65,547 | 76,126.940 | 52,175.7407 |
| Intensity (metric tons $CO_2e$/MW) | | | 5.4 | 4.7 | 5.1 |

Note 1: Emission unit: metric tons of $CO_2e$/year; Intensity calculation: Greenhouse gas emissions of the entire company divided by revenue (in NT$ million).

Note 2: Scope 1: Direct emissions from the process or facility, and the gas type calculated is carbon dioxide.

Scope 2: purchased electricity. The energy source of heat or steam, the gas type calculated is carbon dioxide.

Scope 3: Other indirect emissions, such as employee commuting, business travel, goods _ input power ..., the gas type calculated is carbon dioxide.

Note 3: In 2020 and 2021, the GHG inventory covered only Scope 1 and Scope 2. In 2022, due to the identification of "significant indirect GHG emissions", the staff commuting ( Type 3), business travel ( Type 3), goods_input electricity ( Type 4), services_waste disposal ( Type 4) in Scope 3 were included in the calculation.

Note 4: The organizational boundary of the inventory covered the Taipei office, Hsinchu plant, Hsinchu Science Park plant, Zhunan plant and Tainan plant. (The Hsinchu plant was closed in 2021; the inventory data of the Taipei office were added in 2022; and the Hsinchu Science Park plant halted production in April 2023)

Note 5: For 2021 data, according to the Ministry of Environment 14064 declaration changed to the operation control method, the calculation of the Ministry of Environment greenhouse gas inventory table version 3.0.0 adopted Emission coefficient method, emission coefficient refers to the greenhouse gas emission coefficient management table 6.0.3 version of our Ministry of Environment announcement; GWP value is mainly calculated using the IPCC's fourth evaluation report in 2007.

Note 6: For 2022 data, according to the Ministry of Environment 14064 declaration changed to the operation control method, the calculation of the greenhouse gas inventory table of the Ministry of Environment 3.0.0 version adopted method using emission coefficients. Emission coefficients refer to our country Ministry of Environment announcement of greenhouse gas emission coefficient management table 6.0.4 version; GWP value is mainly calculated by the IPCC 2021 sixth evaluation report.

Note 7: The data for 2021 were not verified by a third party organization, and the data for 2022 to 2023 were verified by a third party organization.

Note 8: The increase in Scope 1 data in 2022 compared to previous years was primarily due to the inclusion of process gases (nitrous oxide, $N_2O$) in the calculations.