

GHG Inventory Training-Scope 1

2023.12



What is Greenhouse Gas (GHG)

- Greenhouse gases (GHGs) are gases in the Earth's atmosphere that absorb and re-radiate infrared radiation emitted from the surface, thus creating a phenomenon similar to the greenhouse effect, causing the surface temperature of the Earth to rise.
- Major greenhouse gases:
 - ✓ carbon dioxide (CO₂)
 - ✓ methane (CH₄)
 - ✓ nitrous oxide (N₂O)
 - ✓ hydrofluorocarbons (HFCs)
 - ✓ perfluorocarbons (PFCs)
 - ✓ sulfur hexafluoride (SF₆)
 - ✓ nitrogen trifluoride (NF₃)
- The increase in these gases is mainly due to human activities such as the burning of fossil fuels, industrial production, etc., resulting in an increase in their concentration in the atmosphere, which is known as the "greenhouse effect" and has an impact on climate, causing problems such as rising global temperatures and an increase in extreme weather events.



Purpose to Collect Electricity Information

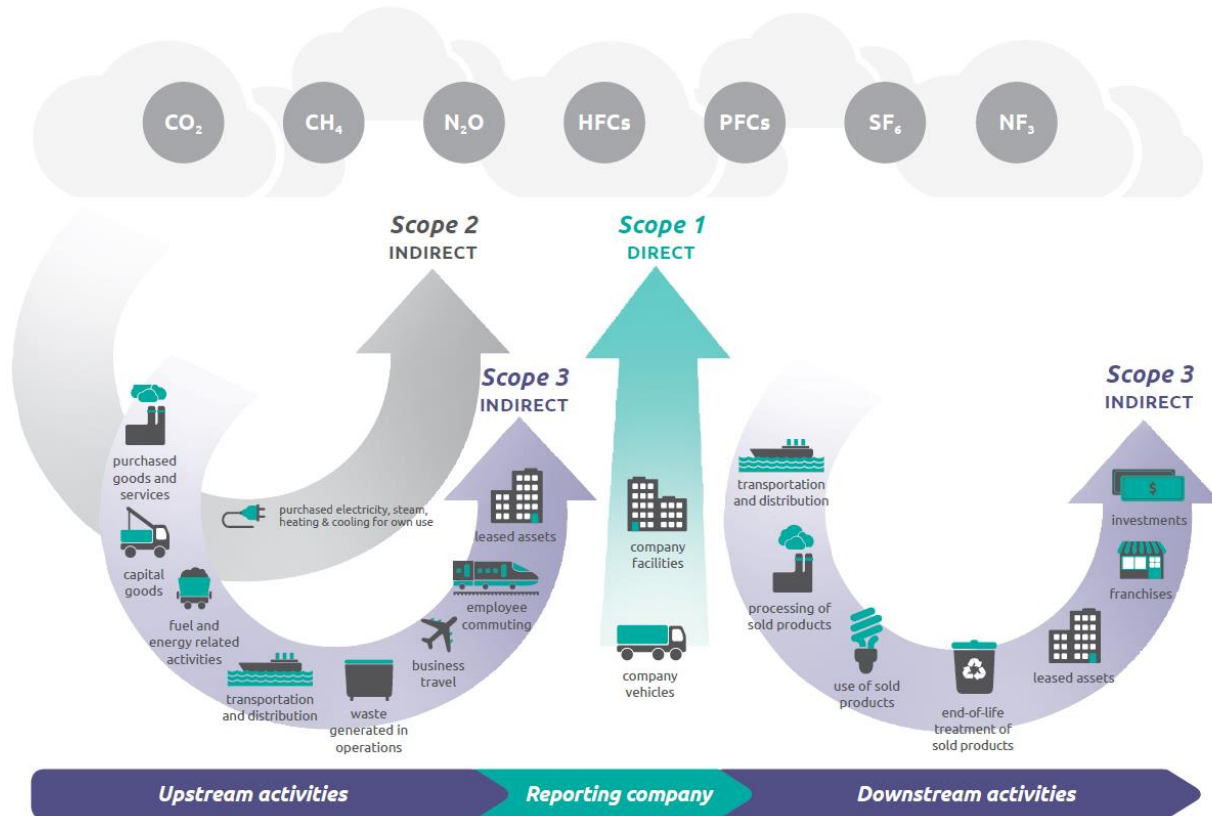
- **Sustainability Roadmap for Listed Companies by Financial Supervisory Commission R.O.C. (Taiwan)**
 - ✓ Taiwan's laws and regulations require companies to complete greenhouse gas inventory and verification schedule planning, and then report to the Board of Directors.
- **SBTi(Science Based Target initiative) Commitment**
 - ✓ Align with the international trend of carbon reduction
- **EPEAT Eco Label**
 - ✓ Procurement Qualification



3 Scopes of Emissions

- Scope 1: Direct emissions generated by direct fuel or energy within the organization
- Scope 2: Indirect emissions generated by the use of electricity within the organization
- Scope 3: Indirect emissions generated by upstream and downstream activities in the value chain

Figure [I] Overview of GHG Protocol scopes and emissions across the value chain



Scope 1 and Scope 2 at A Glance

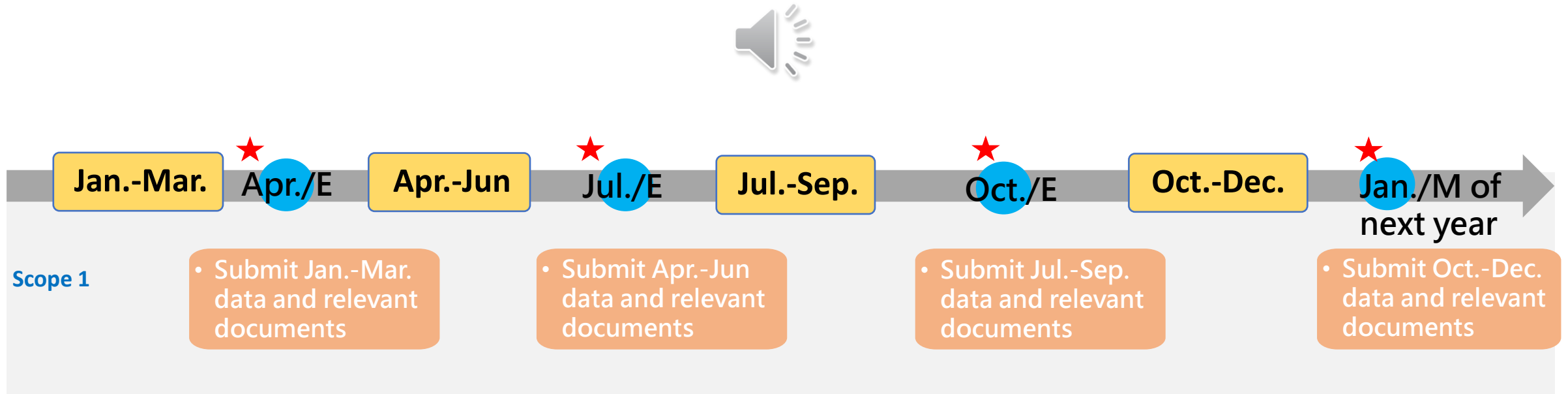
Scope 1: 3 Emissions Types

Emission Type	Equipment	Emission Source	Possible Greenhouse Gases Produced
Stationary	Boiler, gas stove, heater, emergency generator	Gas/Diesel/Natural gas	CO ₂ , CH ₄ , N ₂ O
Mobile	Company vehicle	Gas/Diesel	CO ₂ , CH ₄ , N ₂ O
Fugitive	Air conditioner, ice water dispenser, refrigerator, air conditioner of the vehicle	Refrigerant	HFCs



Inventory Schedule

- In order to meet ASUSTeK's net-zero target, we will start to collect Scope 1 data on **quarterly basis** of the reporting year.
- Please submit Q1 data (Jan.- Mar.) in the end of April, Q2 data (Apr.-Jun.) in the end of July, and so on. Please see the timeline below.



Filling Out the Survey

- General Info. & Instruction
- Scope 1: Fuel and Refrigeration Equipment



General Info. & Instruction

- Requested Information
 - ✓ Reporting Period (e.g. 2023/1/1~2023/12/31)
 - ✓ Country
 - ✓ Name of Subsidiary in short (e.g. ACH)
 - ✓ Numbers of office/site
 - ✓ Main Contact Window
 - ✓ Number of Employees by the end of the year (provided in next Jan.)
 - ◆ Employees: (1) Regular (2) Expatriate (3) Temp. Contractor (4) Intern/Trainee, and including both Full-time and Part-time.
 - ◆ Number of Employees: take the number of the above categories who were still employed by the last working day in the reporting year.
 - ✓ Total hours worked by the Defined Employees in the reporting year (provided in next Jan.)
 - ◆ Calculate the total working hours for the defined employees.
- If you are unclear or have any questions about the requested information, please contact the following personnel:
 - ✓ Main Contact: Fanny_Hsieh@asus.com
 - ✓ Alternatives: Sail_Lee@asus.com

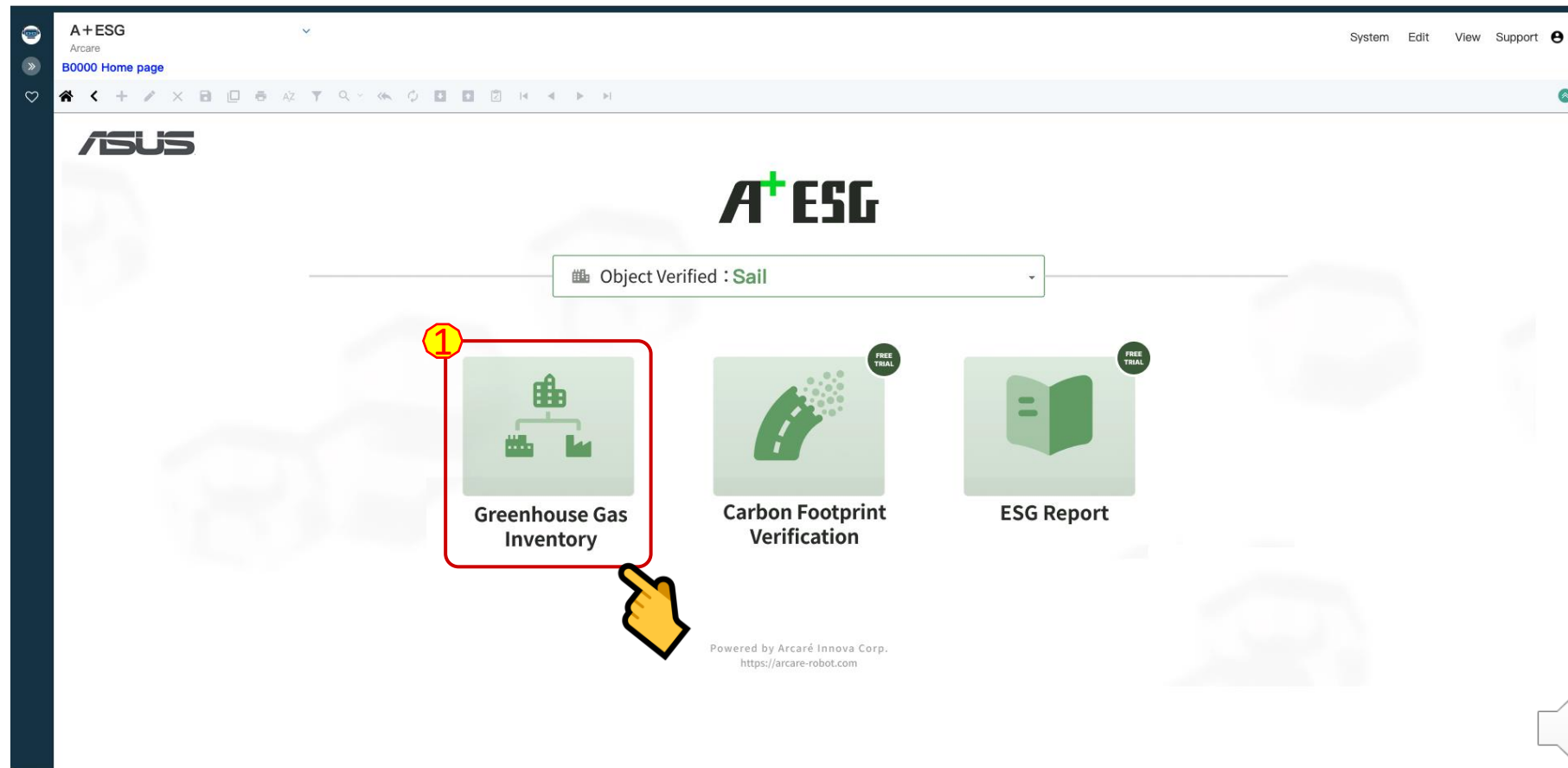
The screenshot shows the 'A+ ESG' system interface. The breadcrumb trail is: B0000 Home page > B1000 Organizational Dating Homepage > B1101 Audit subject maintenance. The 'Audit subject' form is for '森田印刷' (Sentien Printing Co., Ltd.). The form fields are as follows:

Audit subject		森田印刷	
Nations	台灣	District	
Company address	科技五路85號		
Uniform numbers	68682185	Factory certification #	
Company website	http://www.sentien.com.tw/		
Contact person	Ken	Contact phone #	0909090909
Mobile phone		Contact Email	ken_Ye@asus.com
Industry 1	印刷業	Industry 2	
Control number		14064 version	
Memo			
Abbreviation	森田印刷		
Subject code	00018		
Postal code	709		
Chairman			
Employees	50		
Fax			
Administrator	ArcaneRuru		
Contract status	1. In period		
Usage period from	2024/01/02		
Until	2025/01/01		
Authorized by	2. Enterprise		
Authorized in	<input checked="" type="checkbox"/> 14064 <input type="checkbox"/> 14067 <input type="checkbox"/> ESG		



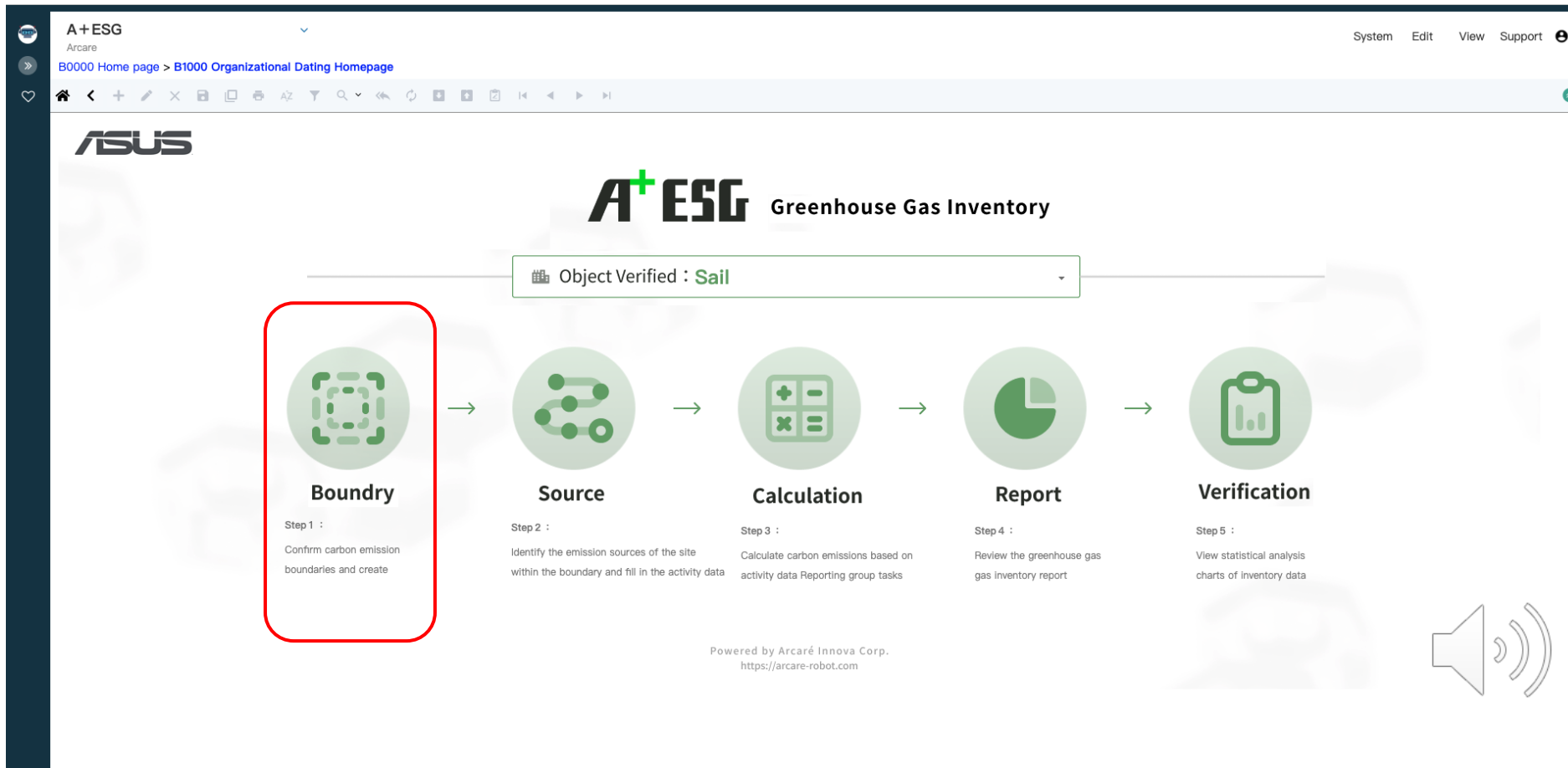
B0000 Home > Log In

- After logging in, click on 'Organization Carbon Check' to enter the workspace.



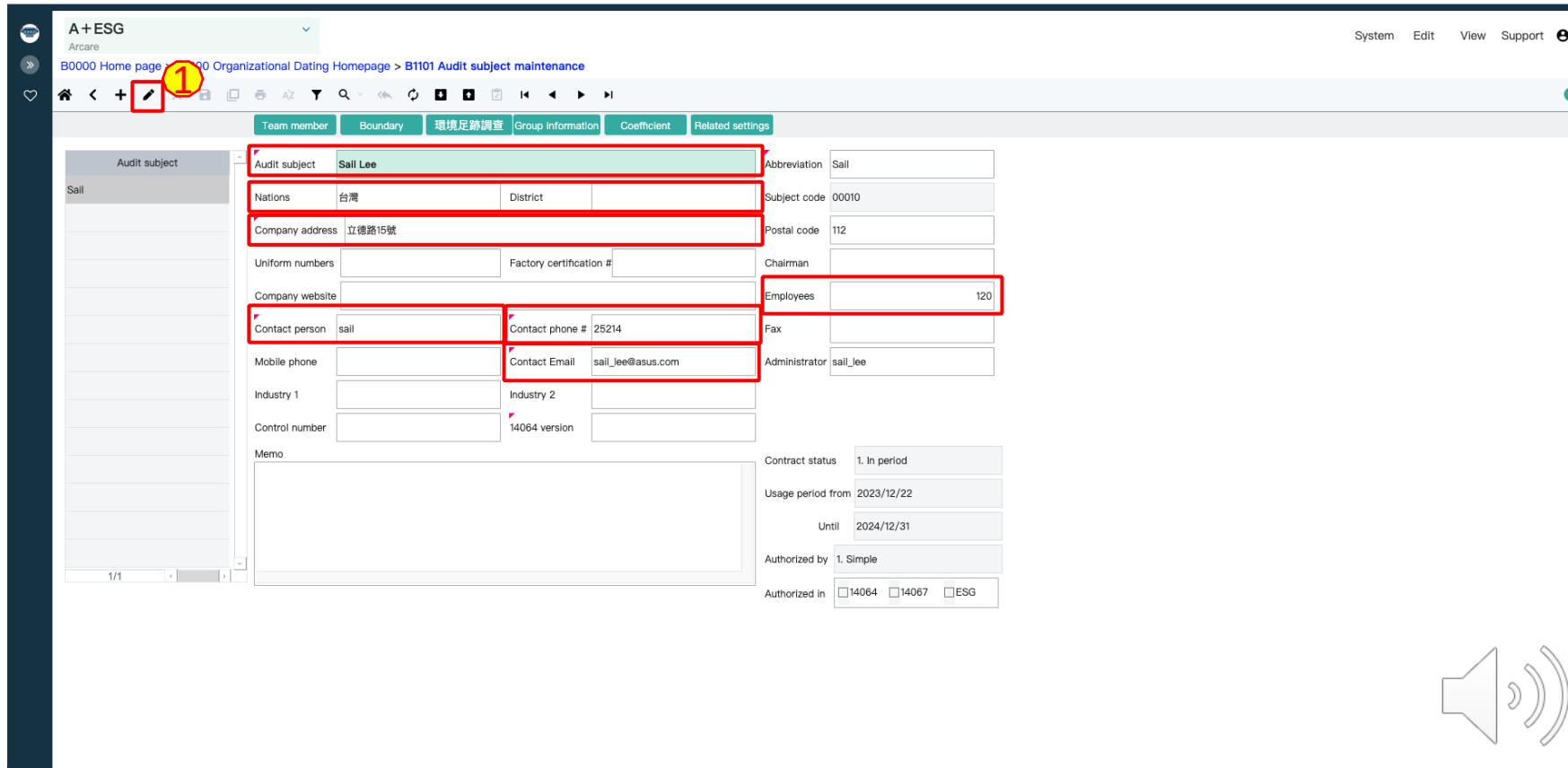
Introduction Page (Homepage)

- 【B1000 Organized Inspection Homepage】 - Click on the functional keys of the images according to the stages of inspection 'Boundary, Source, Algorithm, Report, Check' to enter the corresponding process.



Basic Information Entry

- Confirm that the 'subject of investigation name' matches your company's trade name, and enter the address, main contact person, contact phone number, contact person's email, and number of employees.



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B0000 Home page > B1100 Organizational Dating Homepage > B1101 Audit subject maintenance

System Edit View Support

Team member Boundary 環境足跡調査 Group information Coefficient Related settings

Audit subject

Sail

Audit subject: **Sail Lee** (Abbreviation: Sail)

Nations: 台灣 (District:) (Subject code: 00010)

Company address: 立德路15號 (Postal code: 112)

Uniform numbers: (Factory certification #:) (Chairman:)

Company website: (Employees: 120)

Contact person: sail (Contact phone #: 25214) (Fax:)

Mobile phone: (Contact Email: sail_lee@asus.com) (Administrator: sail_lee)

Industry 1: (Industry 2:)

Control number: (14064 version:)

Memo:

Contract status: 1. In period

Usage period from: 2023/12/22

Until: 2024/12/31

Authorized by: 1. Simple

Authorized in: ☐ 14064 ☐ 14067 ☐ ESG



Scope 1: Fuel and Refrigeration Equipment

Emission Type	Equipment	Emission Source	Supporting Materials
Stationary	Boiler, gas stove, heater, power generator	Gas/Diesel/Natural gas	Fueling receipts, consumption record
Mobile	Company vehicle, leased car	Gas/Diesel	Fueling receipts, record of the fuel card usage for a vehicle
Fugitive	Air conditioner, ice water dispenser, refrigerator, air conditioner of the vehicle	Refrigerant	Picture of the equipment nameplates, factory instruction manuals, product catalogue



Scope 1: Fuel and Refrigeration Equipment

1. Fuel Combustion of Stationary and Mobile Equipment
- ✓

Boiler: Please confirm whether there is any kitchen using the natural gas, and use the unit (M³) for the amount used.
- ✓

Power generator: Please use the unit Liter (L) for the amount of diesel used
- ✓

Official car: Please confirm whether the vehicles use diesel or gasoline and specify the unit of measurement for usage in either liters (L), Imperial gallons (gal), or U.S. gallons (gal). Recordkeeping should encompass both company-owned and leased vehicles.
- ✓

Building warm air and water: Please confirm whether the heating is used, and use the unit (M³) for the amount of the natural gas used.

Note: The ink of the fuel receipts fade within months and the receipts become hard to read, thus please take the picture of/scan/copy the receipts as soon as you do the filing, so that the information will still be readable to HQ GHG Team.

Datum/Zeit/Ort	Produkt	Km	Menge	Preis	Rabatt	Betrag	MWST
Karte 6972202	02						
02.02. 07:47 POCO Châtel-St-	Bleifrei 95	030774	36.46	1.840	1.790	1.82	65.25 7.70 I
09.02. 08:41 POCO Châtel-St-	Bleifrei 95	031557	41.41	1.870	1.820	2.07	75.35 7.70 I
16.02. 07:18 POCO Châtel-St-	Bleifrei 95	032369	37.01	1.880	1.830	1.85	67.75 7.70 I
Total		6972202	114.88		5.74	208.35	

Unleaded gasoline 95

Fuel Combustion of Stationary and Mobile Equipment 固定與移動燃料排放

Office Name	Equipment	Emission Type	Energy Type	Unit	Jan	Feb
ACCH	Official car公務車	Mobile移動式	Diesel柴油	L升	-	-
ACCH	Official car公務車	Mobile移動式	Gasoline汽油	L升	-	114.88

Scope 1: Fuel and Refrigeration Equipment

2. Refrigerant Equipment
- ✓ Air conditioner
 - ✓ Chiller
 - ✓ Water cooler
 - ✓ Heat pump
 - ✓ Refrigerator
 - ✓ Dehumidifier
 - ✓ Official car-air conditioner (Both company car and leased car should be recorded)

You will need to provide the followings for the equipment:

- ✓ Equipment quantity
- ✓ Refrigerant type (e.g. R410A)
- ✓ Weight of refrigerant coolant of a single unit
- ✓ Picture of the nameplate or product catalogue
- ✓ Product model (suggested)



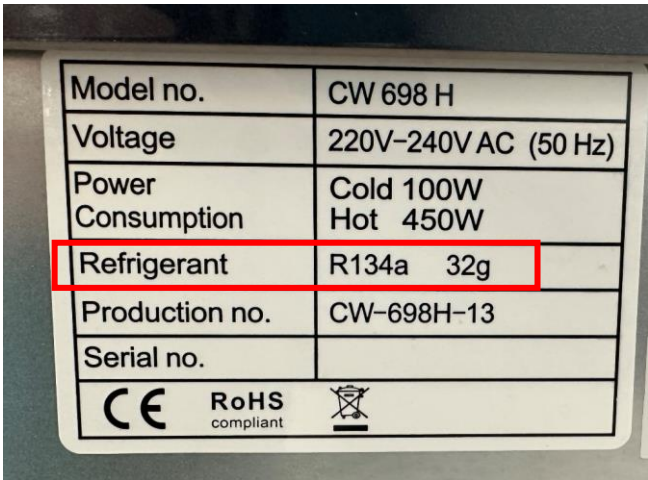
If either the refrigerant type used or the weight of refrigerant coolant of a single unit is different, record them separately.

Refrigerant Equipment 含冷媒製冷設備							Note
Office Name	Equipment	Equipment Type	Equipment Quantity	Refrigerant Model	Weight of Refrigerant Coolant (KG)	Total Weight of Refrigerant Coolant (KG)	
ACUK	Air conditioner冷氣	Residential and commercial building air conditioners	2	R410A	4.5	9.00	Units 1&2
ACUK	Air conditioner冷氣	Residential and commercial building air conditioners	2	R410A	1.8	3.60	Units 3&4

Scope 1: Fuel and Refrigeration Equipment

How to Look for the Information for “Refrigerant Type” and the “Weight of Refrigerant Coolant”

An air conditioner might have a nameplate/label on the indoor and/or the outdoor unit. The nameplate usually details all sorts of information, including the cooling (and heating capacity for reverse cycle systems).



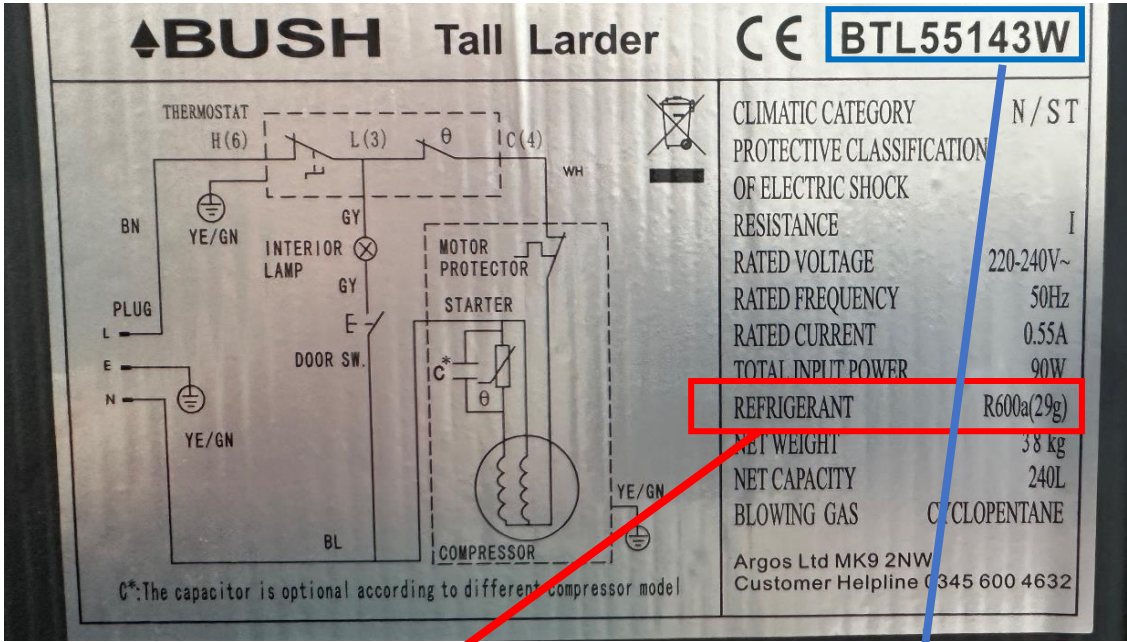
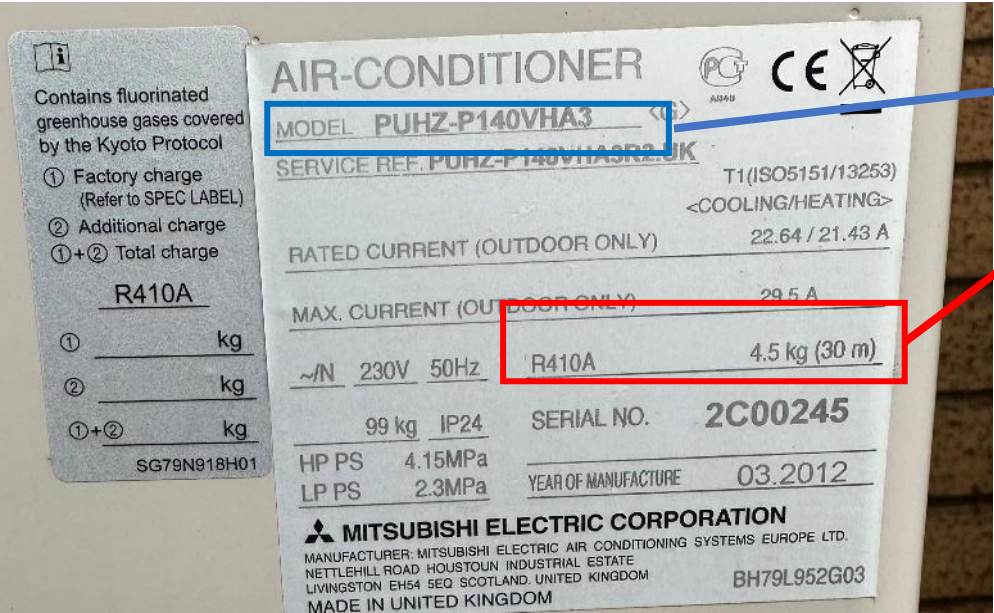
Chiller



Scope 1: Fuel and Refrigeration Equipment

Refrigerant Equipment 含冷媒製冷設備

Office Name	Equipment	Equipment Type	Equipment Quantity	Refrigerant Model	Weight of Refrigerant Coolant (KG)	Total Weight of Refrigerant Coolant (KG)	Note
ACUK	Air conditioner冷氣	Residential and commercial building air conditioners	2	R410A	4.5	9.00	Units 1&2
ACUK	Air conditioner冷氣	Residential and commercial building air conditioners	2	R410A	1.8	3.60	Units 3&4



Refrigerant Equipment 含冷媒製冷設備

Office Name	Equipment	Equipment Type	Equipment Quantity	Refrigerant Model	Weight of Refrigerant Coolant (KG)	Total Weight of Refrigerant Coolant (KG)	Note
ACUK	Refrigerator冰箱	Household refrigeration equipment家用冷凍冷藏設備	1	R600a	0.029	0.03	Fridge 1

Scope 1: Fuel and Refrigeration Equipment

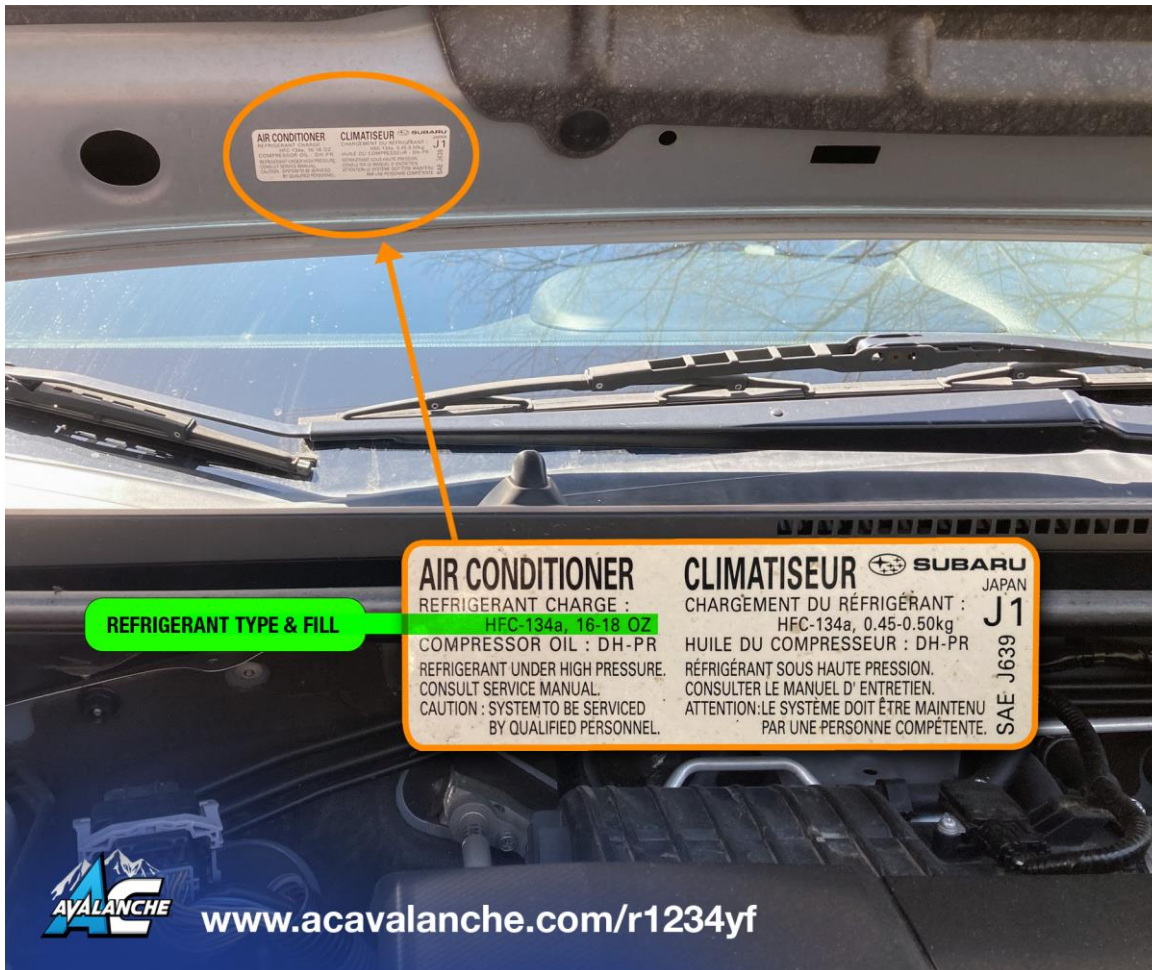
Refrigerant Equipment 含冷媒製冷設備

Office Name	Equipment	Equipment Type	Equipment Quantity	Refrigerant Model	Weight of Refrigerant Coolant (KG)	Total Weight of Refrigerant Coolant (KG)	Note
ACCH	Official car-air conditioner公務車冷氣	mobile air cleaner移動式空氣		R1234YF	0.46	0.46	

Other Examples:



Scope 1: Fuel and Refrigeration Equipment



How to get the “Refrigerant Type” and the “Weight of Refrigerant Coolant” of A Vehicle

Regarding the Refrigerant Equipment of the official or leased car, you may see the sticker or the nameplate of the mobile air-conditioner of the office car after open the hood. Please see the place shown in the left picture.

If you cannot open the hood or cannot find the nameplate, please try to email the official car dealer/car retailer/leased car company to see if they know such information, and the email will use as the supporting documentations. The question would look like the following, and we hope this would give you some ideas how to ask:

Please help provide the refrigerant type in the air conditioner and its quantity in 2017 Nissan Qashqai. For example, R-134a with freon R134 amount 550g, tolerance plus minus 15g.



If the information is still not available, please do let us know.

Scope 1: Fuel and Refrigeration Equipment

Note:

- ✓ We expect that the information of the refrigerant equipment will only be asked for the very first time.
- ✓ It would be helpful if you could provide information such as the product model of the equipment and the manufacturer so that we could track and may find the relevant information easier.
- ✓ If you have ASUS-owned cars but did not report them in the past, you will need to submit the fuel usage and refrigerant information of air conditioner since 2023 data.
- ✓ Since we will have to go through a stricter verification, some data related to leased cars will be newly included since 2023 data. Please see the table below for your reference and be prepared for the record for the leased car.



Official Car Owner	Fuel Usage Information	Refrigerant Type and Used in the Refrigerant Equipment
ASUS-owned Car	YES	YES
Leased Car	YES	Only when refill is happened outside the regular maintenance period



Before Submitting the Scope 1 Data, Please Check:

- ✓ For those who provide data of Fuel and Refrigeration Equipment for 2022: If there is any new, replaced, or retired equipment in 2023, please add items in the platform for documentation
- ✓ Provide files or documents for the Fuel Consumption of stationary and mobile emissions.
- ✓ Please confirm the refrigerant usage information for vehicles.



B1300 Activity Data Inventory Operation

- Choose 'Source' to enter the inventory data collection operation.

The screenshot displays the A+ESG Greenhouse Gas Inventory web application. The top navigation bar includes the ASUS logo, the A+ESG logo, and the title 'Greenhouse Gas Inventory'. Below the navigation bar, there is a dropdown menu showing 'Object Verified : Sail'. The main content area features a five-step process flow:

- Boundry**: Step 1 : Confirm carbon emission boundaries and create
- Source**: Step 2 : Identify the emission sources of the site within the boundary and fill in the activity data (highlighted with a red box and a yellow circle with the number 1)
- Calculation**: Step 3 : Calculate carbon emissions based on activity data Reporting group tasks
- Report**: Step 4 : Review the greenhouse gas inventory report
- Verification**: Step 5 : View statistical analysis charts of inventory data

At the bottom of the page, it states 'Powered by Arcaré Innova Corp. https://arcare-robot.com'. A speaker icon is visible in the bottom right corner.

B1300 Activity Data Inventory Operation

- The following three items can be entered in Scope 1.
 - Fuel-related data
 - Septic tank data
 - Refrigerant leakage data

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT)

Download sample file Merge files import All data export Emission source file

Audit subject GHG

Emission source category	Maintenance	Main file XLS	Checklist	Activity data	Import history
S1 fuel -related data				import	View
S1 septic tank data				import	View
S1 refrigerant loose data				import	View
S2 outsourcing electricity data				import	View
S2 renewal energy use				import	View
C1 purchasing goods and services	Inspect	import	Export	import	View
C2 Capital Finance				import	View
C3 upstream fuel and energy				import	View
C4 upstream transportation and distribution				import	View
C5 business waste				import	View
C6 employee				import	View
C7 employee commute				import	View
C8 upstream rental assets				import	View
C9 downstream transportation and distribution				import	View
C10 sales product processing				import	View

1/20

B1300 Activity Data Inventory Operation > S1 Fuel-Related Data

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT)

Download sample file Merge files import All data export Emission source file

Audit subject Sall GHG

1

Emission source category	Maintenance	Main file XLS	Checklist	Activity data	Import history
S1 fuel -related data				import	View
S1 septic tank data				import	View
S1 refrigerant loose data				import	View
S2 outsourcing electricity data				import	View
S2 renewal energy use				import	View
C1 purchasing goods and services	Inspect	import	Export	import	View
C2 Capital Finance				import	View
C3 upstream fuel and energy				import	View
C4 upstream transportation and distribution				import	View
C5 business waste				import	View
C6 employee				import	View
C7 employee commute				import	View
C8 upstream rental assets				import	View
C9 downstream transportation and distribution				import	View
C10 sales product processing				import	View

1/20

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT) > B1301 S1 Fuel-related data

5

Upload Attachment

3

Attachment list

Audit subject Sall

Recognition date	Device name	Boundary
2023/12/22	公務車	台北廠
2023/12/22	公務車	台北廠
2023/12/22	公務車	台北廠

2

4

Recognition date2023/12/22

Boundary name台北廠

Device name公務車

Statistical date from2023/12/01

Statistical date to2023/12/31

Data input dept.

Data typeRegular (intermittent)

consumption50.0000公升(L)

Emission coefficient

coefficient name柴油

Emission typeFixed

Energy typediesel fuel

Remark

Modified by李育帆

Modified date2024/01/30 14:46



B1300 Activity Data Inventory Operation > S1 Septic Tank Data

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT)

Download sample file Merge files Import All data export Emission source file

Audit subject Sall GHG

Emission source category	Maintenance	Main file XLS	Checklist	Activity data	Import history
S1 fuel -related data				import	View
S1 septic tank data				import	View
S1 refrigerant loose data				import	View
S2 outsourcing electricity data				import	View
S2 renewal energy use				import	View
C1 purchasing goods and services	Inspect	import	Export	import	View
C2 Capital Finance				import	View
C3 upstream fuel and energy				import	View
C4 upstream transportation and distribution				import	View
C5 business waste				import	View
C6 employee				import	View
C7 employee commute				import	View
C8 upstream rental assets				import	View
C9 downstream transportation and distribution				import	View
C10 sales product processing				import	View

1/20

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT) > B1302 S1 Septic tank data

Upload Attachment Attachment list

Audit subject Sall

Recognition date	Boundary
2023/12/22	台北廠

1/1

Recognition date2023/12/22Boundary name台北廠

Statistical date from2023/12/01Statistical date to2023/12/31

Data input dept.人資Data typeContinuous measureme

Employees quantity150 PeopleTotal working hours288,000 Hour

Coefficient name廢水處理BOD

Remark

Modified byArcareRuruModified date2024/01/16 12:50

1

2

3

4

B1300 Activity Data Inventory Operation > S1 Coolant Dissipation Data

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT)

Download sample file Merge files import All data export Emission source file

Audit subject GHG

Emission source category	Maintenance	Main file XLS	Checklist	Activity data
S1 fuel –related data				import
S1 septic tank data				import
S1 refrigerant loose data				import
S2 outsourcing electricity data				import
S2 renewal energy use				import
C1 purchasing goods and services	Inspect	import	Export	import
C2 Capital Finance				import
C3 upstream fuel and energy				import
C4 upstream transportation and distribution				import
C5 business waste				import
C6 employee				import
C7 employee commute				import
C8 upstream rental assets				import
C9 downstream transportation and distribution				import View
C10 sales product processing				import View

3/20

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT) > B1303 S1 Refrigerant leaking data

Upload Attachment Attachment list

Audit subject

Recognition date	Boundary	Device name
------------------	----------	-------------

0/0

Recognition date

Boundary name

Statistical date

Data input dept.

Calculating method

Device category

Emission factor rate

Remark

Modified by

Device name

Statistical date

Data type

Total capacity of refrigerant

Refrigerant model

GWP value

Modified date

25

Addition Coefficient

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT) > B1302 S1 Septic tank data > B1012 Carbon Emission Coefficient Query

Return Self-develop coefficient

Coefficient source

Emission type

Coefficient name

Audit subject

Emission category

Search

Coefficient	Emission type	Emission source	Coefficient name	Data unit	Coefficient code
Environmental Pr	Artificial System/Yisan	廢水處理	BOD		DEF-000070

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B0000 Home page > B1000 Organizational Dating Homepage > B1300 Activity data check operation (SBT) > B1302 S1 Septic tank data > B1012 Carbon Emission Coefficient Query

上傳

附件

Audit subject

Coefficient name

Coefficient name

Coefficient source

Emission type

Coefficient desc.

Coefficient code

Data unit

Emission category

GHG category	Coefficient value	Coefficient unit	Interval min.	Interval max.
Carbon dioxide CO	1450.0000000000	kgCO ₂ e/kg	1111%	2222%

Modified by

Modified date

1/1

1/4

1/1

1/4



IN SEARCH OF INCREDIBLE

Thank you

