

# Environmental Sustainability Management (Go Green)

## Environmental Policy and Practice

HARN recognizes that its business operations have both direct and indirect environmental impacts on stakeholders throughout the value chain. Therefore, the company has established an environmental policy, which is publicly available on its website at [www.harn.co.th](http://www.harn.co.th). HARN is committed to driving and supporting initiatives that minimize environmental impact, ensuring business growth aligns with sustainable environmental management. Focuses on setting operational frameworks to ensure that its business activities consider the reduction of environmental and community impacts while also supporting climate change mitigation efforts.

HARN is dedicated to working with and encouraging stakeholders across the value chain, including partners, service providers, contractors, non-controlled businesses, joint venture partners, and customers to adopt the principles of its environmental policy through the following practices:

- 1) Continuously adhere to relevant environmental laws, standards, regulations, and agreements with customers, partners, or stakeholders within the value chain.
- 2) Define environmental objectives and targets to prevent and mitigate environmental impacts resulting from HARN's activities, products, and services, while also promoting environmentally friendly products and services.
- 3) Reduce direct and indirect carbon dioxide emissions in operations, aiming for Carbon Neutrality by 2040 and Net Zero Emissions by 2050.
- 4) Enhance processes and products to minimize environmental impact while maintaining high-quality products and services. This includes ensuring compliance with customer requirements regarding restricted substances.
- 5) Optimize the use of energy, utilities, waste, and pollution control within operations including fuel, electricity, water, solid waste, hazardous waste, air pollution, and greenhouse gases to reduce environmental impact. Promote efficient use of limited resources based on the 3R principles is to reduce unnecessary consumption, reuse materials for maximum efficiency, recycle materials through reprocessing or transformation, including integrate Circular Economy principles to minimize waste generation.
- 6) Raising environmental awareness, provide education, and communicate the environmental policy to employees and all individuals working under HARN's control. Including providing relevant environmental training programs to enhance knowledge and encourage environmentally responsible practices.
- 7) Strengthen relationships with society, government agencies, private organizations, and other related entities by continuously supporting and participating in activities for natural resource and environmental conservation.
- 8) Continuously improve operational methods and workplace environments to meet safety standards and protocols, reducing accidents and preventing occupational diseases that may arise from work activities, thereby minimizing risks to occupational health and safety.
- 9) Provide mechanisms for stakeholders across the value chain to share opinions and suggestions on environmental issues to drive continuous improvement in processes and foster sustainable coexistence.
- 10) Regularly monitor and review environmental policies, including management plans to adapt to the current situation.



HARN has established the Sustainability Working Group and Carbon Footprint Management Working Group, chaired by Mr. Thammanoon Tripetchr (CEO) and advised by Dr. Jain Charnarong (directors), advisor to oversee all aspects of effective sustainability operations. In line with HARN’s sustainability goals for controlling organization’s greenhouse gas emissions, Scope 1, Scope 2 and Scope 3 are compliant.

This includes establishing guidelines for resource management and control to ensure maximum efficiency, raising awareness, and providing education on environmental issues. Communication

with the board of directors, executives, and employees is maintained to foster ongoing environmental responsibility, along with training and seminars for target employee groups and relevant working committees.

Additionally, the Building Management Department and the Occupational Health, Safety, and Environmental Department are responsible for overseeing resource utilization within the organization to ensure efficiency. They are required to report operational results in the monthly Sustainability Committee meetings for continuous improvement and optimization.

## Environmental Performance

In 2024, HARN organized a training session on “Reducing Waste, Sorting Properly, and Disposing Correctly” on October 9, 2024, and a seminar on “Climate Resilience” on December 9, 2024, for 24 executives and 14 employees. Additionally, HARN communicated information on “Carbon Reduction and Climate Change Mitigation” through email, LINE Official Account, Intranet, and Digital Signage to enhance awareness and understanding

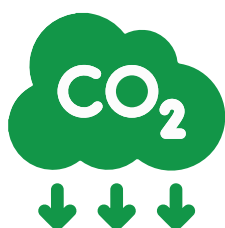
among all employees about the threats of global warming. Also reviewed the risks and creates a plan the goals for controlling organization’s greenhouse gas emissions, promote use of business electric vehicles to reduce impacts on the environment and greenhouse gas emissions in the value chain, including the follow-up on the operating performance systematically.



## Climate Change Action

The current climate change crisis is becoming increasingly severe, with the affected areas expanding continuously. This issue has gained global attention, as reflected in the key discussions at the 29th United Nations Climate Change Conference (COP 29), which aims to limit global temperature rise to no more than 1.5°C above pre-industrial levels. The rising concentration of greenhouse gases directly impacts human life, biodiversity, and the environment, leading to more extreme weather conditions, seasonal fluctuations, and natural disasters.

Recognizing the urgency of this issue, HARN prioritizes reducing greenhouse gas emissions to mitigate global warming, implemented climate risk analysis and assessments, including risks such as flooding and regulatory changes in response to climate change that could affect business operations. In response, HARN has developed risk mitigation and adaptation to potential risks to achieve the committed to achieving carbon neutrality by 2040 and reaching net-zero greenhouse gas emissions by 2050.



**2040**

**Target: Achieving Carbon Neutrality.**



**2050**

**Target: Net Zero Greenhouse Gas Emissions.**

## Greenhouse gas emission management from business operations

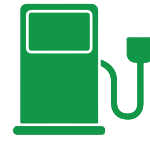
### 1) Energy Management

#### Energy Management

HARN remains committed to managing electricity and fuel consumption efficiently. The company aims to reduce electricity consumption by 30% or equivalent 6% per year by 2028 and decrease fuel consumption by 5% per year, compared to the 2023 baseline.



Reducing Electricity Consumption by **30%** compared to the 2023 baseline.

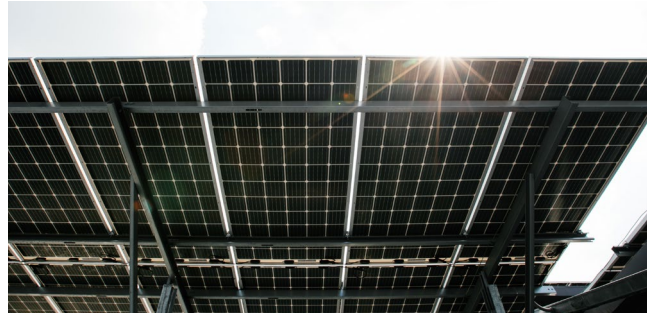


decrease fuel consumption by **5%** compared to the 2023 baseline.

#### Operations Energy Management

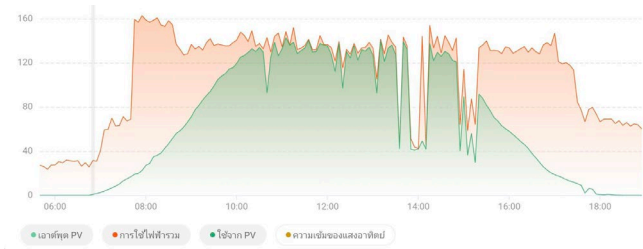
HARN there is a system for data collection of electricity to analyze and plan on electricity control, while promoting indirect energy savings, with the installation of 330 solar panels size of 127 kW and selected the PoE Lighting system to control the lighting system from the lights inside the building by using internet lines instead of electric wires. The system automatically dims the light from the lamp when there is enough sunlight from outside. Additionally, the building harnesses natural light to create brightness without introducing heat (Light Harvest). This can save electric energy and expenses, including the reduction of environmental impacts.

Also, HARN to learn and establish a building and energy management system by its internal team, together with Aiyaraharn Co., Ltd. ("Subsidiary"), which Internet of Things (IoT) know-how, we target for energy in architectural design no more 100kWh/m<sup>2</sup>/year, which is considered lower than in Bangkok office building. Furthermore, in early 2024, HARN installed an additional 177 kW solar panel. Therefore, in 2024, it can generate more electricity from renewable sources by approximately 20%, and statistics had electricity consumption in HARN's building of 60.9 kWh/m<sup>2</sup>/year, this exceeds the design goal of 40%, and it was a building with very low energy per square meter, approaching a zero-energy building (ZEB) of 57 kWh/m<sup>2</sup>/year. Moreover, HARN's has been awarded the DGNB (Green Building) standard, Gold Certificate level by the German-Thai Chamber of Commerce and DGNB GmbH in 2022.

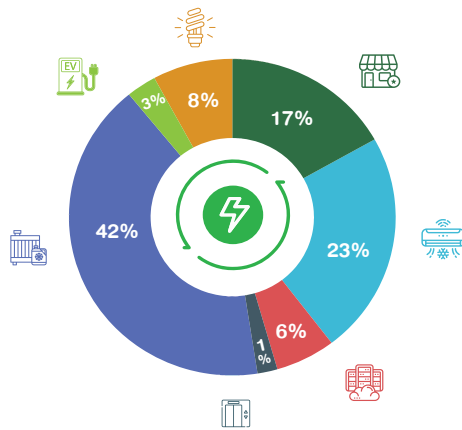




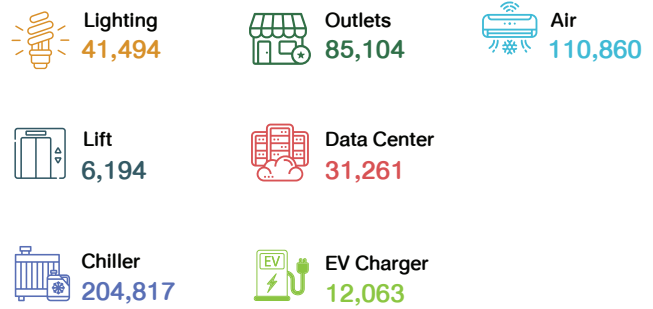
The data on graph from the Building Management System above, the proportion of solar panel (green) with the electricity that needs to be purchased from the Metropolitan Electricity Authority (MEA) (orange) each day. It is noticeable that during the period between 10:00 a.m. and 3:00 p.m. has capability to generate electricity equal to the demand. In 2024 it found the proportion of energy consumption in the HARN office as follows:



Energy consumption ratio (%)



2024 HARN Building Energy Consumption Ratio (kWh)



It can be seen that the chiller, including AHU & A/C are the systems that energy for 64% of the total electricity, that HARN's office building has only 9% of the energy, which is lower than the lighting system, typical buildings 25% of the total energy, so HARN aims to optimize the maintenance these

two systems for always maximum efficiency to reduce energy. What HARN has built in this office building will become a corporate culture of energy-saving consciousness, and no matter where employees are located, they will always have a sense of reducing energy loss.



Additionally, to minimize emissions from fossil fuel usage, HARN has set a goal to transition 60% of its corporate vehicle fleet to electric vehicles (EVs) within three years and achieve a 100% transition within five years, compared to the 2023 baseline. The company will gradually replace vehicles as they reach the end of their lifecycle to meet its annual fuel consumption reduction target of 5%. In 2024, HARN has already replaced four fuel-powered company vehicles with electric vehicles as part of this initiative

### Activities Energy Management

HARN participated in the Energy Beyond Standards 2024, with the intention to be a significant force in promoting sustainable energy conservation, organized by the Department of Alternative Energy Development and Energy Conservation.



## Performance Energy Management

In 2024, HARN achieved a 13.68% reduction in electricity compared to the baseline year of 2023. This was primarily due to the installation of an additional 177 kW of solar panels. Additionally, fuel consumption decreased by 4.17% compared to the baseline year, driven by the transition to four electric company vehicles. The details of our energy management initiatives are as follows:

Electricity Consumption	Unit	2024	2023	2022
Electricity purchased target <sup>1/</sup>	kWh	563,731.16	421,168.80	414,135.63
Total electricity consumption	kWh	795,338.15	759,308.15	669,899.00
- Electricity purchased	kWh	517,656.00	599,714.00	526,461.00
- Electricity from renewable energy sources	kWh	277,682.15	159,594.15	143,438.00
Percentage of total electricity purchased compared to target	%	(8.17)	42.39	27.12
Ratio of total electricity purchased to total number of employees	kWh / Person / Year	2,087.32	2,498.81	2,140.09
Total electricity expense	Baht	2,491,508.33	3,076,766.67	2,513,039.47
Percentage of total electricity expense to total expenses	%	0.22	0.26	0.22
Percentage of total electricity expense to total revenues	%	0.20	0.23	0.20
Ratio of total electricity expense to total number of employees	Baht / Person / Year	10,046.40	12,819.86	10,215.61

**Note :** 1/ In 2022, the company set a target to reduce electricity purchases by 30%, followed by a 20% reduction target in 2023 and a 6% reduction target in 2024, compared to the baseline years of 2021, 2022, and 2023, respectively.

Fuel Consumption	Unit	2024	2023	2022
Fuel consumption target <sup>1/</sup>	Liters	379,329.01	298,264.16	149,687.71
Total fuel consumption	Liters	382,641.36	399,293.69	313,962.28
- Diesel fuel Consumption	Liters	241,666.14	270,488.38	193,584.71
- Gasoline fuel Consumption	Liters	126,031.82	109,063.00	96,973.08
- Other fuel Consumption	Liters	14,943.40	19,742.31	23,404.48
Total fuel expense	Baht	22,359,426.55	21,856,911.74	20,973,866.94
Percentage of total fuel expense to total expenses	%	1.97	1.85	1.86
Percentage of total fuel expense to total revenues	%	1.76	1.65	1.69

**Note :** 1/ In 2022 - 2024, set a target to reduce fuel consumption by 5, compared to the baseline years of 2021, 2022, and 2023, respectively.

## 2) Water Resources Management

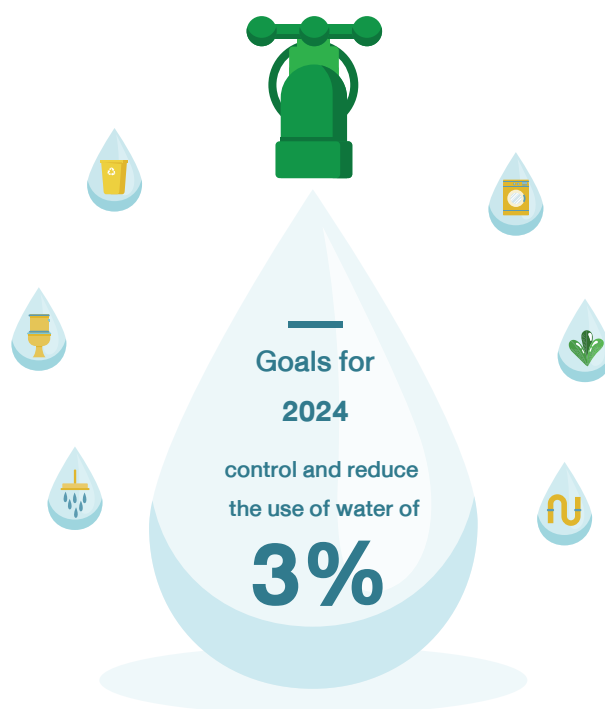
### Targets Water Resources Management

HARN has engaged in import and distribution, the main procedures do not major problems water issue. However, HARN the importance to wisely water resources management, set the goal compared with the base year 2023 in order to control and reduce the use of water of 3% per year.

### Operations Water Resources Management

HARN continuously promotes integrated water management, emphasizing efficient water usage and planning in accordance with circular economy principles, enhances water management efficiency by recycling wastewater from Air Handling Units (AHUs) in the air conditioning system is used to water plants. This initiative not only reduces water expenses but also minimizes wastewater discharge into natural water sources.

Additionally, HARN regularly inspects and monitors water usage and equipment to prevent leaks and reduce water loss, as well as has also installed an automated water system integrated with a rainfall measurement system, ensuring that watering is paused during rainfall. This approach further optimizes water consumption efficiency.



### Performance Water Resources Management

In 2024, HARN achieved a 1.03% reduction in tap water consumption compared to the baseline year of 2023. This decrease resulted from initiatives to promote awareness and encourage responsible water usage, as well as regular inspections of water-related equipment. The details of our water resource management efforts are as follows:

Water Withdrawal	Unit	2024	2023	2022
water withdrawal target <sup>1/</sup>	CMB	9,670.90	9,471.50	8,132.95
Total water withdrawal	CMB	12,442.00	12,571.00	9,970.00
Percentage of total water withdrawal compared to target	%	28.65	32.72	22.59
Ratio of total water withdrawal to total number of employees	CMB / Person / Year	50.17	52.38	40.53
Ratio of total water consumption to total revenues	CMB / Revenue	0.00001	0.00001	0.00001
Total water withdrawal expense	Baht	195,028.03	212,343.00	168,674.91
Percentage of total water withdrawal expense compared total expenses	%	0.017	0.018	0.015
Percentage of total water withdrawal expense compared total revenues	%	0.015	0.016	0.014
Ratio of total water withdrawal expense compared total number of employees	Baht / Person / Year	786.40	884.76	685.67

**Note :** 1/ In 2022-2023, set a target to reduce water withdrawal by 5%, followed by a 3% reduction target in 2024, compared to the baseline years of 2021, 2022, and 2023, respectively.

### 3) Waste and Pollution Reduction Management

#### Targets Waste and Pollution Reduction Management

HARN applies circular economy principles in waste, waste material, and air pollution management, aiming to minimize waste generation while implementing the 3R principles: Reduce unnecessary use, Reuse materials efficiently, and recycle to maximize resource value. Additionally, HARN advances the concept of eliminating environmentally harmful materials and chemicals, rethinking disposal methods to ensure materials are repurposed or transformed for further use.

HARN has set a target to reduce non-hazardous waste sent to landfills by 5% per year compared to the 2023 baseline, as well as decreasing hazardous waste, chemical waste, and air pollution from operations by 5% per year. Furthermore, HARN aims to maintain zero pollution-related complaints arising from its operations



reduce non-hazardous waste sent to landfills  
5% compared 2023



decreasing hazardous waste, chemical waste, and air pollution by operations  
5% compared 2023



Reduce air pollution by 5% compared 2023 and achieve Zero pollution complaints.

#### Operations Waste and Pollution Reduction Management

HARN, encourage employees to manage waste correctly, creating the awareness of energy conservation, raise the employees to awareness the environmental issue, in addition, launched segregation by the type of 5 waste, namely, ordinary waste, food waste, recycled waste, hazardous waste and chemical waste, by authorized individuals from the Department of Industrial Works, Ministry of Industry is the operator who disposes of chemical waste e.g. solvents and contaminated containers, can be verified and traced back. Meanwhile, the non-hazardous wastes, food waste and hazardous waste be sent to landfill by government agencies. For recycled waste such as plastic, paper, glass, metal, are delivered to other service providers for proper separation and recycling.

Additionally, HARN implements air pollution control measures in parallel with its operations, ensuring compliance with legal standards. These measures cover emissions from fire suppression agent refilling processes, 3D printing parts manufacturing, and printer demonstrations conducted within office buildings and warehouses. Furthermore, HARN manages vehicle emissions from both company cars and delivery trucks with environmental policies, which promotes the transition to electric vehicles (EVs) instead of fuel-powered cars. Also conducts regular inspections of third-party transport vehicles to ensure they meet emission standards, thereby reducing environmental impact. Additionally, HARN has installed air quality monitoring devices within and around its office buildings to maintain a healthy indoor environment.

#### Activities Waste and Pollution Reduction Management

1. Manages each type of waste the 3R principle, all activities were 100% successful



#### Reduce

1. Reduce paper usage, adjust work methods by developing digital systems
2. Send documents through electronic means such as email
3. Store documents as files through shared drives
4. Meetings through Conferences and E-Meeting
5. Send questionnaires through Google Forms
6. Distribute training materials through electronic channels



#### Reuse

Reuse single-sided waste paper



#### Recycle

Classifying waste, adding value by selling different types of waste



## 2. Effuse classification

Encourages employees to separate waste into different categories to reduce the amount of waste sent to landfills, including helping to reduce pollution and protect the environment. Proper waste sorting has led to a decrease in the amount of waste that needs to be sent for landfill disposal and an increase in recyclable waste compared to the previous year.



## 3. WON Project

HARN has encouraged employees to separate plastic bags and film for the mechanical recycling process, transforming them into recycled plastic pellets (Post Consumer Recycle Resin: PCR), which can be used as raw materials in manufacturing again more sustainable through product design and production, reducing the need for natural resources and helping to tackle the plastic waste issue. Additionally, the WON project an environmental initiative that benefits the public, with every 1 kilogram of plastic bags and film collected contributing 5 Baht to be donated to environmental foundations.

In 2024, HARN contributed 23.40 kilograms of plastic bags and film to the program, a donation of 117 Baht to environmental foundations.



## Performance Waste and Pollution Reduction Management

In 2024, HARN achieved a 74.10% reduction in non-hazardous waste compared to the baseline year of 2023. This was driven by a shift to measuring actual waste weight, along with initiatives to raise employee awareness of environmental issues and educate them on proper waste segregation in accordance with the 3R principles. In 2022 and 2023, waste weight calculations were based on an average of 1.07 kilograms per person per day, as referenced in the 2022 Waste Management Report by the Pollution Control Department.

Hazardous waste and chemical waste from operations also decreased by 45.62% compared to the baseline year of 2023. This reduction resulted from the adoption of environmentally friendly product technologies and the implementation of more standardized and efficient waste management planning. Additionally, air quality within and around HARN remained at 100% compliance with regulatory standards, with no reported air pollution complaints. The details of our waste and pollution management initiatives are as follows:

Waste Generation	Unit	2024	2023 <sup>2/</sup>	2022 <sup>1/2</sup>
Non-hazardous waste target <sup>1/</sup>	Kg.	47,154.53	56,375.85	57,652.65
Total non-hazardous waste	Kg.	12,853.40	49,636.35	59,343.00
Percentage of total non-hazardous waste compared to target	%	(72.74)	(11.95)	2.93
Ratio of total non-hazardous waste to total revenues	Kg. / Revenue	0.00001	0.00004	0.00051
Hazardous waste target	Kg.	4,227.50	5,215.50	6,716.50
Total hazardous waste	Kg.	2,420.00	4,450.00	5,490.00
Percentage of total hazardous waste compared to target	%	(42.76)	(14.68)	(18.26)
Ratio of total hazardous waste to total revenues	Kg. / Revenue	0.000002	0.000003	0.000004
Total recycled non-hazardous waste	Kg.	5,770.90	-	-
Percentage of total recycled non-hazardous waste compared to total non-hazardous waste	%	0.45	-	-

Note : 1/ In 2022-2024, set a target to reduce non-hazardous waste by 5%, compared to the baseline years of 2021, 2022, and 2023, respectively.

2/ In 2022-2023, calculations were based on an average of 1.07 kilograms per person per day, as referenced in the 2022 Waste Management Report by the Pollution Control Department.



## 4) Greenhouse Gas Emission to Reduce Management

### Targets Greenhouse Gas Emission Management

HARN is a group of the “industrial”, importing and distribution of Fire Suppression products, Air-conditioning products, Sanitary products, Refrigeration products, Digital Printing products, 3D Medical products. Recognizing the impact of climate change, continuously implemented projects to reduce greenhouse gas emissions from business operations and set the goals compared with the base year 2023 in order to control and reduce organization’s greenhouse gas emissions, scope 1 and scope 2 of 5% per year, and by 2050, reduce scope 3 to zero to achieve the goal to aim for carbon neutrality by 2040 and Net Zero Emission by 2050.



reduce organization’s greenhouse gas emissions, scope 1 and scope 2 of 5% compared to 2023 baseline.



Goals for carbon neutrality 2040 Scope 3 net emissions target is Net Zero by 2050

### Operations Greenhouse Gas Emission Management

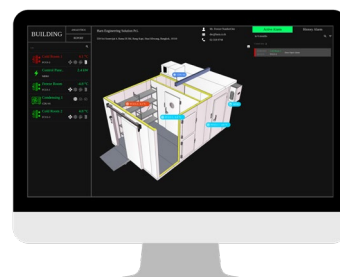
HARN analyzed the risks and opportunities, formulated a strategic/innovative plan to support HARN’s greenhouse gas emission reduction. For example, installed solar panel to increasing the proportion of renewable energy, transforming the company’s cars into electric vehicles, implementing technology and digital systems in workflows, implementing long-term business restructuring towards low-carbon businesses, pursuing new environmentally business opportunities based on the circular economy, offsetting

carbon using nature based solutions through Care the wild “Plant & Protect” project, exploring means of applying the Carbon Capture and Storage technology. In addition, Dr. Jain Chamnarong, Executive Director of HARN realized the environmental problems regarding PM 2.5, with collaborates with the government, private, and people sector through “Ban Kor Sandbox” project to forest fire reduction and restore green areas to reduce the villagers’ poverty, and wisdom creation.

### Activities Greenhouse Gas Emission Management

HARN is a business the “industrial”, found that the activity with the highest organization’s greenhouse gas emissions is scope 3 is the use of sold products. HARN has become aware of the proportion of greenhouse gas emissions from the sale of a large quantity of compressors to the cold storage and air-conditioning industry. Although, HARN itself does not have a direct role in the energy consumption reduction process, it should strive to develop technology for customers in the supply chain. Refrigeration systems are directly related to the preservation of food and medicine, making them indispensable and a critical four factors. Compressors are considered crucial components consuming a significant high of energy. Furthermore, the efficiency of the system relies on several interconnected equipment to cost will be very high without good management. Therefore, HARN aims to customers with maximum efficiency, including the safety and environmental friendliness in refrigeration, it has developing Internet of Things (IoT) technology to enhance efficiency and reduce energy consumption in refrigeration systems.

HARN has collaborated with Aiyaraham to invent, research, and develop the IoT system under the name Telechill Smart Solutions (S2). In addition to providing the ability to monitor the performance of refrigeration systems online at any time and from anywhere, the most significant benefit is its ability to reduce energy consumption in refrigeration systems, lower cold storage business costs, and minimize environmental impact, aligning with the goal of achieving net-zero greenhouse gas (CO2) emissions. Furthermore, the IoT system can integrate with other equipment that HARN distributes and can also be adapted to work with other widely used equipment in the market.

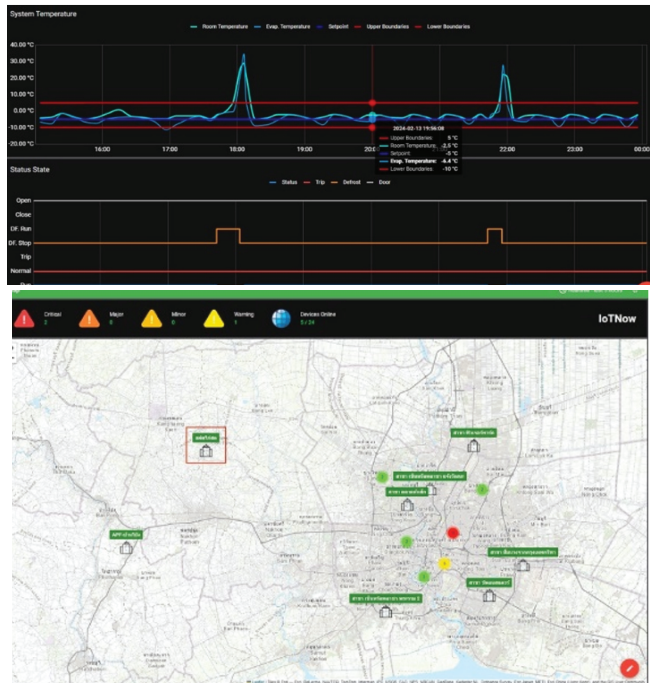


Telechill S<sup>2</sup>  
Smart Solutions



The implementation of Telechill S2 in cold storage, when compared, can reduce greenhouse gas emissions by over 2,936.41 kilograms of carbon dioxide equivalent (kgCO<sub>2</sub>e) per year, which is equivalent to planting 300 trees annually in a cold storage unit at -5°C temperature, using a 35-horsepower compressor in just one room. Therefore, Telechill Smart Solutions (S2) not only enhances the efficiency of cold storage but also helps reduce operational costs sustainably and is environmentally friendly, allowing customers to adapt to future changes in energy, technology, and environmental friendliness.

Additionally, critical cold storage operation data will be stored on the Cloud system, making it possible to monitor and analyze the data to improve energy efficiency in refrigeration systems more effectively. In the future, HARN may utilize artificial intelligence to analyze this data, making the system smarter and potentially evolving into a strategy for expanding business in energy reduction solutions for HARN’s refrigeration systems.



### Performance Greenhouse Gas Emission Management

In 2024, the direct and indirect business emissions of HARN increase 12%, compared with the base year 2023. However, HARN has implemented this plan, communicating through a variety of channels to strengthen culture, promote knowledge, and raise awareness of reducing greenhouse gas emissions to director, executives and employees consistently in order to the set goals. HARN complied with the prescribed standards and laws, did **not** pay any fines, and was **not** subject to any environmental penalties.

HARN’s carbon footprint calculation is based on the assessment principles and formulas cited by Thailand Greenhouse Gas Management Organization (Public Organization: TGO), which has not passed the review of TGO experts. The performance greenhouse gas emission management are as follows:

Greenhouse Gas Emissions	Unit	2024	2023	2022
Total GHG emissions target <sup>1/</sup>	tCo2e	328,482.92	1,016.77	505.24
Total GHG emissions	tCo2e	387,327.87	345,771.49	1,070.29
- Total GHG emissions - scope 1	tCo2e	1,121.12	1,039.11	807.11
- Total GHG emissions - scope 2	tCo2e	209.10	268.07	263.18
- Total GHG emissions - scope 3	tCo2e	385,997.65	344,464.32	-
Percentage of total GHG emissions compared to target	%	17.91	28.56	111.84 <sup>2/</sup>

**หมายเหตุ :** 1/ In 2022-2023, set a target to reduce GHG emissions by 5%, followed in 2024 by scope 1,2,3 a 5% reduction target and scope 3 a zero-reduction target in 2050, compared to the baseline years of 2021, 2022, and 2023, respectively.

2/In 2021, the carbon footprint was calculated incomplete the first time, led to a high percentage comparison the target in 2022.