

# Environmental Sustainability Management



## Environmental Policy and Practice

HARN considering on all impacts on protecting the environment along the demand chains, emphasize on efficiently the use of resource and good resource management since selection of products selection which does not harm the natural resources and is environmental friendly, strictly following the laws and regulations instructed by governing bodies, reducing the wastes and leftovers from the operation, save energy in the work place, by setting the policy of occupational health, safety and environment under ISO 45001:2015. In order to have the management in term of safety, occupational health and environment as per guideline. HARN set the objectives in term of environment by managing, controlling the efficient use of resource, reducing the use of resource from the previous year. There was the review of roles and responsibility for the safety, occupational health and environment Committee so that the duties in accordance with the policy., also make the plans for the operation and activities in order to create the working environment with safety, as well as continuous campaigns to raise awareness and provide knowledge about the environment to employees. For example, providing safety in work training courses for employees, setting greenhouse gas emission reduction targets, and communicating through email, LINE official, intranet and digital signage for raise the awareness of sustainable energy saving of all employees. In addition, the company assigns the building management to monitor and manage the use of resource such as; measures using air conditioning, lighting, water supply, waste or waste, as well as doing the monthly performance report for the meeting of managers so that the performance can be improved for efficiency and effectiveness, and reduce impacts and maintain a good environment along with sustainable business growth.

## Environmental Performance

In 2023, had reviewed the training manual used on occupational health, safety and environment, including the training for 25 new employees. The test results after the training show 95.6% of success with communicate via email, LINE Official, Intranet and digital signage to let all employees know importance of greenhouse gases, benefits of carbon footprint, the way organization to reduce greenhouse gas emissions and energy consumption, water consumption, waste/pollution management, including how to prevent dangers from PM2.5 dust and fires. Including how to use electricity safely when it rains. To create awareness of the dangers that can occur in the rainy season, etc.

training for new employees



25 employees



The test results after the training show 95.6%

## The danger of dust

### What diseases can dust cause?

- Cough, sneeze, snot, sore throat, phlegm.
- Allergies, sinusitis, difficulty breathing, chest pain
- Bronchitis, Wheeze
- pulmonary fibrosis, emphysema
- Respiratory system cancer



### Risk group

- People who use contact lenses
- small child
- Elderly people
- Places with high smog and pollution problems
- People with lung disease and respiratory system

### Protection

- Wear a mask.
- Avoid leaving the building, or residence if not necessary.
- Don't smoke
- Drink lots of clean water.
- Wash your hands and face often.
- Maintain cleanliness of the residence
- When abnormal symptoms appear, see a doctor immediately.
- Patients with asthma or heart disease
- Carry medicine with you at all times.

Source: PAMA CHANNEL



## Dangers that can occur in the rainy season



### Danger from contagious diseases

- At risk of influenza, you should always take care of your health.

### Danger from traffic accidents

- When it rains, the roads are slippery, easily at risk of accidents. Be careful of driving speed.

### danger from wild animals

- Avoid walking in cluttered areas. Because it is the home of various dangerous animals such as snakes, centipedes, and scorpions.

### Danger of electric shock

- Wet hands should not handle electrical equipment. Electrical cutting equipment should be installed, and install ground wire

Source: hls.co.th/5-danger-rain



## 10 easy ways to prevent fires

1. Fire extinguishers are installed at meet standards in an appropriate amount.
2. Properly store items that may be hot.
3. Turn off the switch and pull the plug of the appliance. Every time after use.
4. Check all types of electrical appliances. Always be in perfect condition.
5. Do not leave incense sticks, candles, or cigarettes lit without anyone in the house.
6. There is a number for the nearby fire station, or emergency number 199.
7. Some electrical appliances should be placed at a distance from the wall to allow heat dissipation.
8. Install a smoke detector. To report incidents in the event of a fire.
9. Turn off the cooling gas tubes. Stop using it every time.
10. Install an automatic power cutter. Short circuit protection.

Source: www.home.co.th

## 3 ways to use electricity safely on wet days



1. While the body or floor is wet Do not touch electrical equipment.
2. Installation of outdoor electrical equipment should be of a waterproof type.
3. Do not use electrical appliances that are wet because electrical current may leak.

Source: Electricity Generating Authority of Thailand

## Climate Change Action

Currently, climate change is a very serious problem. Many countries worldwide have paid attention to reduce greenhouse gas emissions due to the environmental impacts. It is crucial to determine the direction for implementation in accordance with the framework of the United Nations Convention on Climate Change and the Paris Agreement. Thailand has committed to fully raising the level of problem solving with improved its action plan to reduce greenhouse gases according to the participation goals schedule in 2030 to cover all economic sectors. In order to transition to carbon neutrality and Net Zero GHG Emission.

HARN is aware of the impact from greenhouse gas leading to have the global warming and the change of world's weather with declaring the clear position and goal to aim for carbon neutrality by 2040 and Net Zero by 2050, established the Carbon Footprint Management Working Group in 2022, with Dr. Jain Charnnarong, directors and Mr. Thammanoon Tripetchr, CEO act to set clear goals, control and review of the organization's greenhouse gas emissions. Focusing on management energy, water resources, waste and/or pollution reduction, including greenhouse gas emission management from business operations. The past year, HARN conducted and evaluation the risks and creates a plan to review the target value of greenhouse gas emission control, the installation plan of a solar power generation system in the car park area, and promote use of business electric vehicles to reduce impacts on the environment and greenhouse gas emissions in the value chain with a tangible way, including the follow-up on the operating performance systematically.



**Declaring the clear position and goal to aim for carbon neutrality by 2040**



**Net Zero by 2050**



**Established the Carbon Footprint Management Working Group**

## Greenhouse gas emission management from business operations

### 1) Energy Managememe

HARN is operated in the service industry, therefore, it was found that the activity with the highest greenhouse gas content is the use of electricity and fuel from corporate vehicles. Therefore, made plan to reduce energy consumption, and set the goal of reducing energy consumption of 20% compared with the base year 2022. However, HARN there is a system for data collection of energy consumption to analyze and plan on energy consumption control, while promoting indirect energy savings, with the installation of 330 solar panels size of 127 kW and selected the smart 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. This can save electric energy and expenses, including the reduction of environmental impacts.



**Reduce energy consumption, and set the goal of reducing energy consumption of 20% compared with the base year 2022**



**Energy consumption control, while promoting indirect energy savings, with the installation of 330 solar panels size of 127 kW**

Also, HARN chose to learn and establish a building and energy management system by its internal team, together with Aiyaraharn Co., Ltd. (Subsidiary) with Internet of Things (IoT) know-how, we aim for energy to be less than 100kWh/m<sup>2</sup>/year, which is considered lower than in Bangkok office building in 2023. Statistics found in 2023, HARN had electricity consumption in HARN's head office building of 60.9 kWh/m<sup>2</sup>/year, which was 40% lower than the design target. 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. This kind of building would typically have the capability to generate sufficient energy to meet the needs during certain periods of the day. Moreover, HARN's building has been awarded the DGNB (Green Building) standard, Gold Certificate level by the German-Thai Chamber of Commerce and DGNB GmbH.

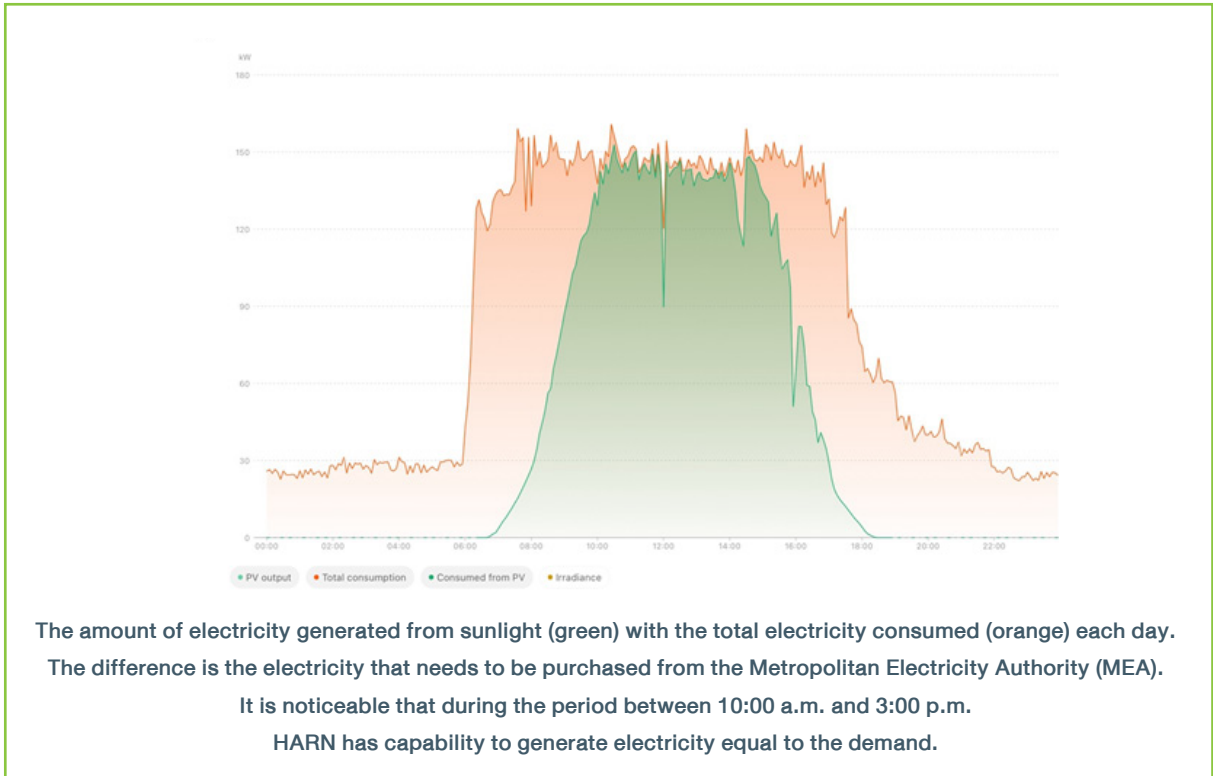
At the end of the year 2023, HARN installed an additional 177 kW solar panel. In total, it can generate more electricity from renewable sources by approximately 20%. In January 2024, energy consumption was observed to have decreased to an average of 54 kWh/m<sup>2</sup>/year. It can be considered that HARN's office buildings have begun to qualify as buildings type ZEB. From the graph, it is evident that HARN can sufficiently produce electricity from solar energy to meet demand between approximately 10:00 a.m. and 3:00 p.m.



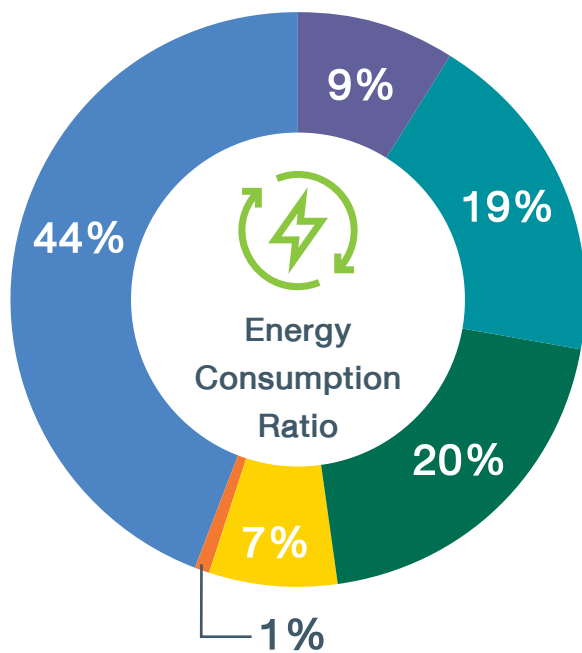
Installed an additional  
**177 kw**  
solar panel



Generate more electricity from  
renewable sources by approximately  
**20%**



The data obtained from the Building Management System developed by HARN and Aiyaraharn Company Limited (“Subsidiary”), it found the proportion of energy consumption in the HARN office the entire year of 2023 is as follows:



- Lighting**  
1,662,420 kwh
- Outlets**  
3,337,720 kwh
- Air**  
3,459,844 kwh
- Data Center**  
1,170,053 kwh
- Lift**  
204,741 kwh
- Chiller**  
7,781,499 kwh

It can be seen that chillers and AHU & A/C are the systems that consume energy accounting for 64% of the total energy consumption, so modification of the two systems is required to reduce energy consumption. HARN aims to optimize the maintenance these two systems for always maximum efficiency.

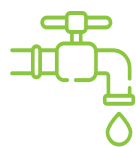
For the lighting system, typical buildings consume 25% of the total energy consumption. It can be seen that HARN's office building has only 9% of the energy consumption because HARN uses a PoE lighting system that dims or turns off the lamps according to the intensity of the light and only when they are used. Additionally, the building harnesses natural light to create brightness without introducing heat (Light Harvest).

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.

## 2) Water Resources Management

Due to the fact that HARN's operations in the service industry, the main business does not problems water issue. However, HARN put the importance to wisely use the water. In 2023, HARN set the goal in order to control the use of water and reduce the use of water of 5% of the office and warehouse compared with the base year 2022 with raise the level of water management according to the principles of circular economy with using water economically and the wastewater is used for watering plants to reduce costs on water and lower the amount of wastewater. HARN's water use in 2023 is 12,283 cubic meters, increase of 24.71% compared base in 2022 (referring to November 2022 to October 2023). However, due to in 2023 there was a cancellation of the Work from Home and there were more tenants, was unable to meet the target. HARN may be necessary to adjust the target to the number of liters/persons, improvement the activity to increase the awareness and involved of the employees, including regularly check for the utilities related equipment in the office and warehouse, which will be reflected more accurately in 2024.

**In 2023, HARN set the goal**



**in order to control  
the use of water  
and reduce the  
use of water of  
5%**

**Water use in 2023 is**



**12,283  
cubic meters**

**Increase of  
24.71%**

## 3) Waste and/or Pollution Reduction Management

HARN, emphasizes on the waste management in the right way in order to lower the volume of waste impacting on the environment as well as the pollution management by setting the plan to reduce the volume of non-hazardous waste in office and warehouse of 5% of non-hazardous waste waste compared with the base year 2022. In 2023, encourage employees to manage waste correctly, creating the awareness of energy conservation, encouraging the employees to understand the environmental issue, in addition, implemented the waste segregation by the type of 4 waste, which is recycle waste, dry waste, wet waste and toxic waste by authorized individuals from the Department of Industrial Works, Ministry of Industry is the operator who disposes of hazardous wastes or chemicals e.g. solvents and contaminated containers, can be verified and traced back. Meanwhile, the non-hazardous wastes 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.

HARN manages each type of waste appropriately the 3R principle is reduction, reuse, and recycling. According to the performance in 2023, all activities were 100% successful, with a non-hazardous wastes' disposal volume of 56,172 kilograms, decrease of 5.73% compared to base the year of 2022 (referring to November 2022 to October 2023), the target has been achieved, with the standardization and efficiency improvement of waste/waste management plans, the waste volume of HARN has decreased compared to last year and the project is implemented annually as follows:



The plan to reduce the volume of non-hazardous waste in office and warehouse of **5%** of the office and warehouse compared with the base year 2022



The performance in 2023, all activities were **100%** successful



non-hazardous wastes' disposal volume of **56,172** kilograms decrease of **5.73%** compared to base the year of 2022

**Reduce**

- Use email to send document e.g. Gmail/ Outlook
- Store data via Data Center
- Use e-meeting
- Change paper-based surveys to Google Form
- Reduce giving out handouts of seminars to soft copy via email
- Implement “One Quality Project” to reduce paper by adjusting the working method, develop using digital systems

**Reuse**

- Print on one side printed paper

**Recycle**

- Placement of separate bins e.g. General waste, used paper, bottles & plastics and sell reusable waste from paper, bottles & plastics



## 4) Greenhouse gas emission management from business operations

### Carbon Footprint

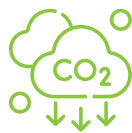
To support the goal to aim for carbon neutrality by 2040 and Net Zero by 2050. The working group on carbon footprint management has met to review and monitor its implementation plan, including risk assessment and continuous adjustment of the Organization's emission storage method, so as to achieve the set target of 5% of the emission reduction compared with the base year 2022. Operating results in 2023 HARN installed the second batch of solar panels of 177 kW/h in some areas of the parking completed earlier year 2024. Combined with the production capacity of the first batch of solar panels, the office building HARN a total power generation of 307 kW/h, in addition, the organization's vehicles be changed from combustion vehicles to electric vehicles in a number of 4 cars already and when each car the service life or cost-effectiveness is considered, will gradually change. In addition, Dr. Jain Charnnarong, the directors, has been involved in the restoration of green spaces, joined with the government, private sectors and citizens in preserve and restore green areas to study ways to reduce forest fires by solving the problems of the villagers, called "Ban Ko Sandbox", to help reduce the PM2.5 dust problem by improving quality of life.

The operation, as of 2023, the direct and indirect business emissions of HARN are 1,044.46 tCo<sub>2</sub>e is divided into scope 1 equal 776.12 tCo<sub>2</sub>e and scope 2 equal 268.34 tCo<sub>2</sub>e (referring to November 2022 to October 2023) decreased of 1.58% compared to base the year of 2022, the principles and formulas cited by Thailand Greenhouse Gas Management Organization (Public Organization: TGO). However, HARN has implemented this plan to strengthen culture, promote knowledge, and raise awareness of reducing greenhouse gas emissions in order to achieve the set goals. HARN's carbon footprint calculation data has not passed the review of TGO experts. In addition, in 2023, HARN complied with the prescribed standards and laws, did not pay any fines, and was not subject to any environmental penalties.



The direct and indirect business emissions of HARN are

**1,044.46** tCo<sub>2</sub>e



Scope 1 equal

**776.12** tCo<sub>2</sub>e

Scope 2 equal

**268.34** tCo<sub>2</sub>e

decreased of **1.58%**

compared to base the year of 2022

## 5) Develop an IoT system for refrigeration systems to reduce energy consumption

In calculating greenhouse gas emissions from business operations in Scope 3, which have not yet undergone review by experts from the TGO. In calculating greenhouse gas emissions from business operations in Scope 3, which have not yet undergone review by experts from the Thailand Greenhouse Gas Management Organization (Public Organization: TGO), HARN has become aware of the proportion of greenhouse gas emissions from the sale of a large quantity of compressors to the refrigeration and air conditioning industry. Indeed, HARN itself does not have a direct role in the energy consumption reduction process, however, it should strive to develop technology for the customers. Refrigeration systems are directly related to the preservation of food and medicine, making them indispensable and a critical factor. Compressors are considered crucial components consuming a significant amount of energy. Furthermore, the efficiency of the system relies on several interconnected equipment. Therefore, HARN should to develop IoT technology to enhance efficiency and reduce energy consumption in refrigeration systems.

HARN, in collaboration with Aiyaraharn, has begun developing an Internet of Things (IoT) system to monitor the performance of refrigeration systems. The aim is to enhance efficiency and reduce energy consumption in refrigeration units by designing the IoT system to integrate with various devices represented by HARN. Moreover, it can also be adapted to other devices in the market that are widely used.

Key operational data from the refrigeration units will be stored in the cloud system, accessible from anywhere and at any time. This enables analysis of performance and provides insights for improving efficiency, particularly in energy consumption, which is crucial.

Once the data is collected, in the future, HARN can further analyze it using artificial intelligence to make the system smarter and capable of devising energy-saving strategies for refrigeration systems. This could potentially may also become new data-driven business in the future.

