Bangkok Hospital Headquarters

"Caring for Your Health. Caring for Our Planet"

Contents

Message from the CEO

Throughout 2025, Bangkok Hospital Headquarters remained steadfast in advancing a healthcare system that is high-quality, safe, and responsive to patient needs, while upholding responsibility to the environment and society. To ensure sustainability initiatives are implemented consistently and with tangible impact, the **BHQ Global Health Impact and Sustainable Development Committee** was formally established to oversee these efforts. The Committee drives a structured approach aligned with the vision and policies of Bangkok Dusit Medical Services Public Company Limited (BDMS) and in accordance with international best practices set forth by the Geneva Sustainability Center (GSC). The Hospital emphasizes engagement across all levels of personnel through concrete initiatives in energy, environment, innovation, and sustainability.

In 2025, Bangkok Hospital Headquarters successfully reduced its greenhouse gas emissions from 25,153 to 24,305 tons of carbon dioxide equivalent (tCO_2e), representing a 3.4% reduction. This achievement was driven by the implementation of concrete energy and environmental initiatives, including a one-hour lights-off campaign during lunchtime, setting air-conditioning temperatures at 25°C, upgrading the building chiller plant to enhance energy efficiency, and promoting the reduced use of desflurane anesthesia to lower greenhouse gas emissions associated with surgical procedures.

This tangible impact underscores the Hospital's capability to integrate high-quality patient care with efficient resource management, minimize environmental impact, and create value for all stakeholders. The dedication and commitment of executives, physicians, nurses, staff, and contracted personnel have been the driving force behind the successful implementation of environmental and sustainability projects.

Bangkok Hospital Headquarters continues to advance toward its greenhouse gas reduction targets and prepare for the long-term journey to Net Zero, under the firm belief that public health and environmental stewardship can progress hand in hand. This approach ensures the delivery of a resilient, responsible, and sustainable healthcare system for current and future generations.

Dr. Matinee Maipang

Chief Executive Officer, Bangkok Hospital Group 1
Hospital Director, Bangkok Hospital

Background and Strategic Importance

The escalating impacts of climate change pose material risks to population health, healthcare systems, and ecosystem stability worldwide. These challenges extend beyond environmental concerns, with direct implications for health outcomes, equitable access to care, operational continuity, and the long-term resilience of healthcare systems.

In this global context, international organizations have assumed an increasingly critical role in advancing sustainable healthcare transformation. The Geneva Sustainability Centre (GSC), Switzerland, established in 2022, was founded with a mission to empower healthcare leaders and hospitals worldwide to transition toward sustainable health systems. GSC's framework emphasizes low-carbon care, equitable care, and resilient care, aligning sustainability objectives with healthcare quality, operational efficiency, and long-term value creation.

In 2023, GSC, in collaboration with Joint Commission International (JCI), developed the **Global Health Impact (GHI)** environmental sustainability standards, which have been incorporated into the 8th Edition of the JCI Hospital Accreditation Standards, effective 1 January 2025. This integration represents a significant milestone in embedding environmental and sustainability considerations into internationally recognized healthcare accreditation frameworks, with increasing relevance to governance, risk management, and performance benchmarking.

In alignment with these global standards and evolving stakeholder expectations, Bangkok Hospital Headquarters established the **Global Health Impact and Sustainable Development Committee** to provide governance, strategic direction, and oversight mechanisms for sustainability integration across all hospital operations and the entire value chain. The Committee focuses on reducing greenhouse gas emissions, strengthening health and safety outcomes for patients, stakeholders, and surrounding communities, and enhancing organizational resilience—supporting operational efficiency, regulatory readiness, and sustainable long-term value creation for all stakeholders.

Vision / Mission / Goal

Vision

To become a leader in innovative healthcare excellence and deliver exceptional customer value and experiences through ethical governance and a deep commitment to sustainable, socially responsible development.

Mission

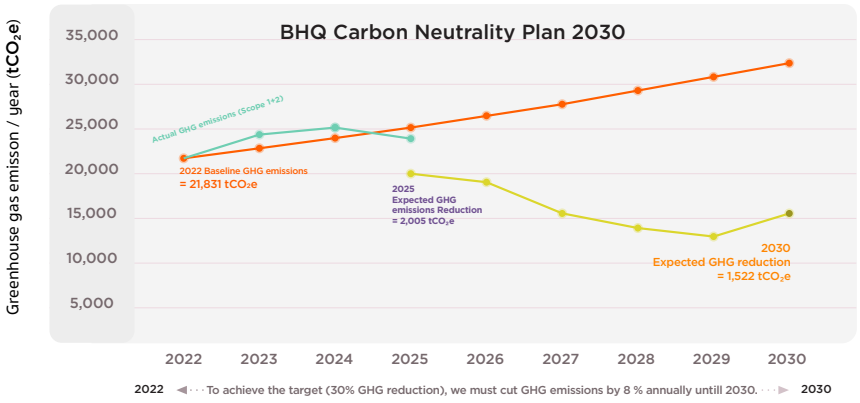
We are committed to advancing healthcare decarbonization in alignment with global standards and promoting a low-carbon future by raising awareness of climate change's economic, social, and environmental impacts.

Goal

Achieve at least a 30% reduction in greenhouse gas emissions by 2030, in alignment with BDMS's sustainability goals.

Global Health Impact Operational Strategy

GOAL : 30% GREENHOUSE GAS REDUCTION BY 2030



Reduce Greenhouse Gas Emissions

By 8%

2025 : Expected GHG emissions
≤ 23,149 tCO_2e
(1,929 per month)

Bangkok Hospital Headquarters has established greenhouse gas (GHG) emissions reduction targets aligned with the organization's long-term sustainable development strategy. From a baseline year of 2022, the Hospital has committed to reducing GHG emissions by at least 30% by 2030. As an interim milestone, by 2025, emissions must be reduced by a minimum of 8%, or limited to no more than 23,044 tons of carbon dioxide equivalent (tCO_2e) per year.

To achieve these targets, the Hospital has defined five core strategies to systematically reduce greenhouse gas emissions and embed sustainability across its operations.

Strategy 1 | Key Performance Indicator (KPI) Cascade

Bangkok Hospital Headquarters has implemented a structured KPI cascading mechanism to translate sustainability and environmental performance indicators from business leaders to functional leaders and operational units. This approach ensures the full integration of sustainability objectives into governance frameworks, management processes, and day-to-day operations across the organization.

The KPI cascade is designed to strengthen strategic alignment, reinforce clear accountability, and promote organization-wide engagement in advancing sustainability goals. The Hospital enables measurable outcomes and sustained progress toward its Global Health Impact commitments.

Strategy 2 | Green Training and Green Idea Sharing

Bangkok Hospital Headquarters prioritizes workforce capability development and the systematic cultivation of a sustainability-driven organizational culture through the Global Health Impact Training Program, known as "**Green Training**". The program strengthens environmental knowledge, awareness, and engagement across all personnel groups, including permanent staff, medical professionals, and contracted service providers.

Green Training is delivered through two structured levels—Basic Training and Specific Training—to ensure that learning content is appropriately aligned with the roles, responsibilities, and professional functions of each group.

1) Basic Training

The Basic Training program is designed to establish a shared understanding of climate change and its impacts on healthcare systems, providing a common foundation of essential knowledge for all personnel. The program focuses on building baseline environmental literacy and fostering awareness of the Hospital's role in addressing global health and sustainability challenges.

Key learning topics include:

a

Basic knowledge about climate and health

b

How this is included in hospital objectives

c

Content related to the hospital's setting, including the local or regional climate impacts and related health outcomes

d

Potential environmental scenarios for the hospital

e

Vulnerabilities identified in the hospital's patient population

2) Specific Training

The Role-Specific Training program delivers specialized learning modules aligned with the distinct roles and responsibilities of each professional group, ensuring that sustainability principles are translated into practical and profession-relevant actions. The program encompasses six key professional groups: physicians, nurses, pharmacists, radiology professionals, contracted kitchen staff, and contracted housekeeping staff.

Training topics for each professional group include:

Physician
1. Enrolling in sustainable practices as a Physician
2. GHI standards and Strategies of reducing GHG
3. Waste reduction & Waste sourcing for Physician

Nurse
1. Waste reduction and Waste sourcing for Nurse
2. Low-carbon model of care for Nurse

Pharmacist
1. Principle of sustainable healthcare in pharmacy practice: for Manager and Head of Department
2. Waste sourcing for Pharmacist and assistance
3. Eco-Friendly Pharmacy: Sustainable Equipment & Medications: for Pharmacist and assistance

Radiologist
1. Waste management in radiology
2. Life cycle assessment in radiology
3. The environmental impact of energy consumption and carbon emission in the radiology department

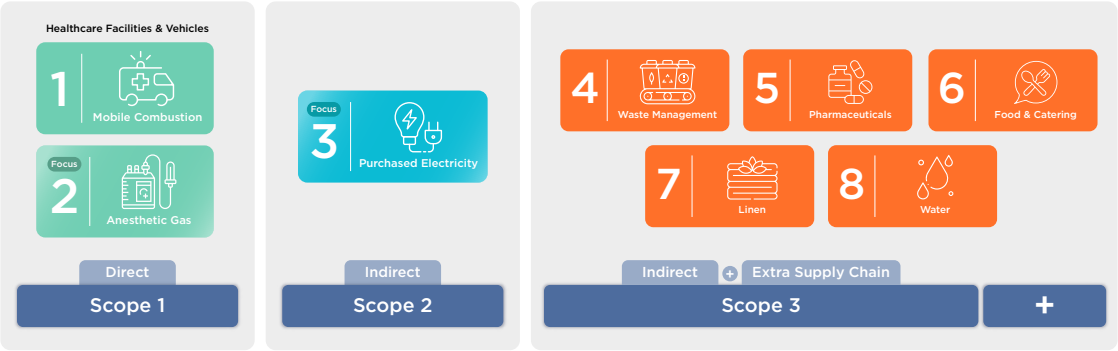
Kitchen
1. Sustainable Culinary Practices
2. Food Waste Management
3. Nutrition and Sustainability
4. Sustainable Ingredient Sourcing & Menu Planning

Housekeeping
1. Green Cleaning Practices
2. Waste Management and Recycling
3. Energy Efficiency in Housekeeping
4. Sustainable Linen Management

Strategy 3 | Green Hospital

Bangkok Hospital Headquarters is committed to reducing carbon emissions across eight key sources through systematic and efficient management of energy, water, and waste. This approach integrates environmental considerations into daily operations while maintaining high standards of care quality and patient safety.

Through this Green Hospital strategy, the Hospital aims to reduce its environmental footprint, enhance operational efficiency, and create long-term value for society and all stakeholders.



Strategy 4 | Green Procurement and Supply Chain

Bangkok Hospital Headquarters enhances its procurement and supply chain management practices to improve efficiency while strengthening

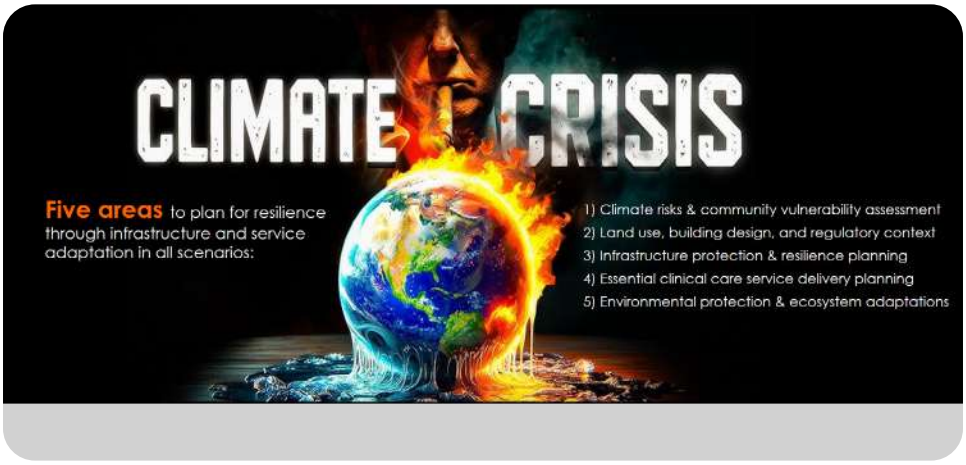
environmental responsibility. The Hospital prioritizes resource efficiency, the selection of environmentally preferable products, services, and alternative materials, and active collaboration with suppliers to advance a more sustainable supply chain.

Strategy 5 | Climate Crisis Plans

Bangkok Hospital Headquarters prioritizes preparedness for the impacts of climate change and future uncertainties by strengthening infrastructure resilience, medical service continuity, and risk management capabilities. This approach ensures that patient care and hospital operations remain safe, effective, and uninterrupted under all conditions.

Under a resilience-based framework, the Hospital has established planning priorities across five key areas, encompassing infrastructure and service adaptation to address a broad range of climate-related scenarios:

1. Climate risks and community vulnerability assessment
2. Land use, building design, and regulatory context
3. Infrastructure protection & resilience planning
4. Essential clinical care service delivery planning
5. Environmental protection & ecosystem adaptations



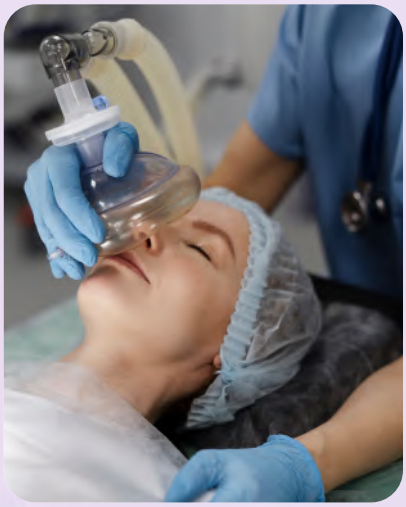
2025 Initiatives and Achievements

1. “BHQ Energy Hero” Program

The Hospital implemented the BHQ Energy Hero initiative to engage personnel at all levels in electricity conservation. Volunteers from each department were trained as **Energy Champions** to promote energy- efficiency practices within their units. The initiative emphasizes simple, behavior-based actions in daily energy use, such as turning off computer monitors and electrical equipment when not in use, and setting air-conditioning temperatures at 25°C. Volunteers also contributed practical ideas which have been incorporated into the Hospital’s energy management strategies.

In 2025, 136 volunteers participated, strengthening organizational awareness, engagement, and continuous improvement in energy efficiency.

2. Desflurane Reduction Initiative in Surgical Anesthesia



The Hospital implemented a targeted initiative encouraging anesthesiologists to reduce the use of Desflurane, an anesthetic agent with a global warming potential approximately 7.8 times higher than that of Sevoflurane. The initiative promotes clinically appropriate anesthetic selection, guided by medical judgment and patient safety standards. As a result, the initiative achieved an estimated reduction of 5,928 kgCO_2e per year, equivalent to the environmental benefit of planting approximately 624 trees. This initiative demonstrates the Hospital’s ability to integrate high-quality clinical care with environmental responsibility into clinical practice while maintaining high standards of care and patient safety.

3. Water Flow Optimization Initiative

The Hospital implemented the Water Flow Optimization initiative to enhance water-use efficiency. Following an engineering assessment, water flow rates of handwashing faucets and male urinal systems were optimized across the Hospital. As a result, average water consumption per personnel decreased by 8.2%, reflecting effective water resource management and supporting the Hospital's sustainability objectives.

4. Solar Energy Installation Project (Phases 1 and 2)

Bangkok Hospital has expanded its use of renewable energy through the installation of solar panels across eight buildings, covering key operational areas. The system generates an average of 119,021 kWh per month and reduces greenhouse gas emissions by approximately 714 tCO_2e per year, equivalent to planting around 75,156 trees. The Hospital plans to further expand solar energy installations at two additional sites in 2026, enhancing clean energy capacity and strengthening long-term energy resilience.

5. Chiller Plant System Optimization for Air-Conditioning Energy Reduction

The Hospital implemented a Chiller Plant System Upgrade by replacing an aging chiller system at the Dental Building with a new, high energy-efficiency system. The installation was completed on 14 October 2025. The upgrade has reduced electricity consumption and greenhouse gas emissions by approximately 1,300 tCO_2e per year, equivalent to planting around 87,303 trees, underscoring a strategic investment in efficient and environmentally responsible infrastructure.

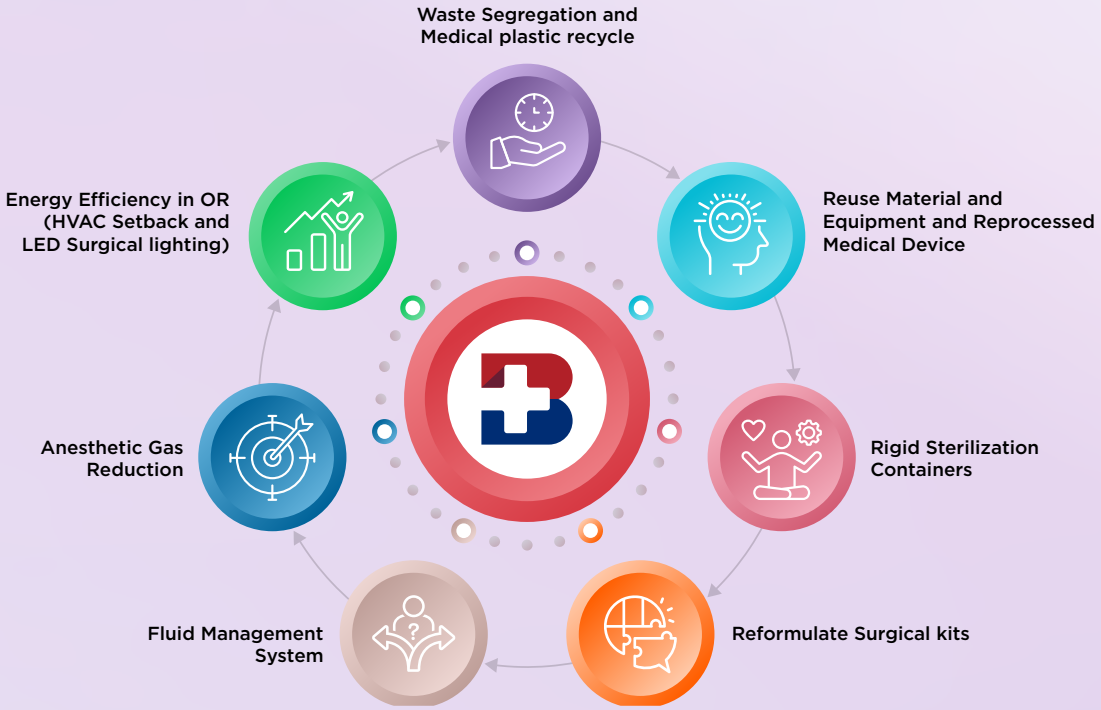
6. OR High Revenue by Reducing Waste

The Operating Room Department implemented customized procedure packs to reduce unnecessary medical supplies and packaging waste without compromising clinical quality. The initiative reduced waste by 44.5 kg per year and greenhouse gas emissions by 47.8 $kgCO_2e$ per year, equivalent to planting approximately five trees, reflecting the integration of sustainability into clinical operations.

7. Enhance Strategies of OR to Sustainability Healthcare

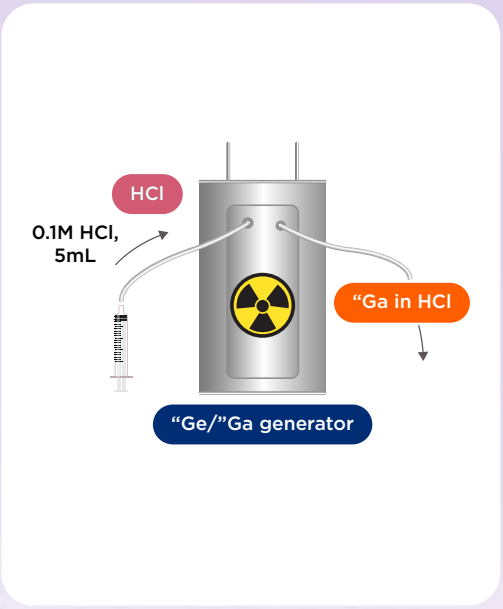
The Operating Room Department at Bangkok Hospital International (BIH) enhanced its sustainability strategies through improved waste management measures, including the reuse of Megasoft plates, optimization of sterilization processes, and refinement of surgical instrument sets. These initiatives reduced operating room waste by approximately 8,284 kg per year and greenhouse gas emissions

by 8,284 kgCO_2e per year, equivalent to planting around 872 trees, demonstrating measurable progress toward sustainable healthcare delivery.

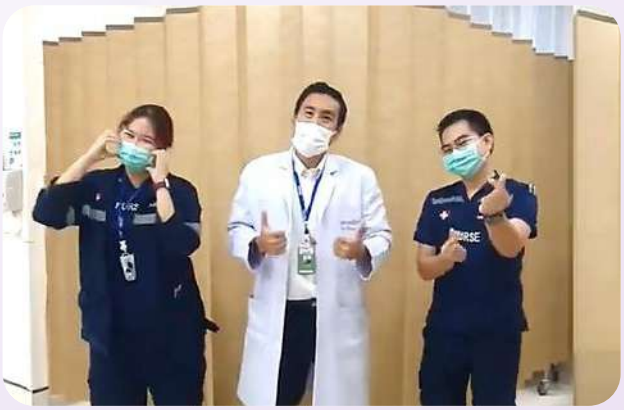


8. Dual Elution, Triple Impact: Boost Yield, Slash Cost, Minimize Waste

The Nuclear Medicine Department developed a new radiopharmaceutical production technique using a Dual Elution process, enhancing resource efficiency, reducing production costs, and minimizing radioactive waste. As a result, the initiative reduced radioactive waste by approximately 30 kg per year and greenhouse gas emissions by 39 kgCO_2e per year, equivalent to planting around four trees, highlighting the role of radiology innovation in supporting efficient and environmentally responsible healthcare systems.



9. Antimicrobial Curtain Innovation Project



The Emergency Room (ER) introduced antimicrobial curtains to replace conventional curtains, reducing infection risk, staff injury during handling, and laundering costs by 87.1%. The curtains are reusable for up to two years and recyclable at end of life. The initiative reduced water, chemical, and energy use, lowering greenhouse gas emissions by approximately 500 $kgCO_2e$ per year, equivalent to planting around 56 trees, reflecting integrated infection control, safety, and sustainability.

10. Stabilized Aqueous Ozone (SAO) Cleaning Initiative

The Hospital adopted Stabilized Aqueous Ozone (SAO) technology for floor disinfection, replacing conventional chemical-based cleaning agents. The initiative reduced chemical use by 59%, lowered occupational health risks, minimized environmental residues, and enhanced safety in service areas. In addition, the project reduced greenhouse gas emissions by approximately 11,448 $kgCO_2e$ per year, equivalent to planting around 1,205 trees, demonstrating the effective application of clean technology to support sustainable hospital operations.

11. No More CDs: Digital Radiology Results Delivery

The Diagnostic Radiology Department transitioned radiology result delivery from physical CDs to a secure web-based portal, improving patient convenience and data security while reducing plastic waste. The initiative reduced CD usage by 238 discs per month and greenhouse gas emissions by approximately 711 $kgCO_2e$ per year, equivalent to planting around 75 trees, underscoring the integration of digital innovation with sustainable healthcare delivery.

12. Second Life Blister Packs Initiative

Bangkok Hospital Headquarters, in collaboration with BDMS network hospitals, implemented the Second Life Blister Packs initiative to collect used blister packs and plastic medication packaging for recycling and repurposing into socially beneficial products. The project extends resource life cycles, reduces plastic waste, and supports circular economy principles. As a result, 53 kg of materials were collected and greenhouse gas emissions were reduced by approximately 81.7 $kgCO_2e$, demonstrating the integration of environmental and social value creation within healthcare operations.

Performance Metrics and Key Results

In 2025, the implementation of the Global Health Impact initiatives at Bangkok Hospital Headquarters was systematically monitored and evaluated by the Global Health Impact and Sustainable Development Committee through seven key performance metrics. These metrics cover greenhouse gas emissions, workforce capability development, resource utilization, and preparedness for climate-related risks.

The performance results demonstrate tangible progress toward the Hospital's sustainability objectives, while also identifying opportunities for further enhancement and continuous improvement in future implementation.

The seven key metrics of the Global Health Impact and Sustainable Development Committee are summarized in the table below:

No	Measure name	Numerator	Denominator	Target
1	**Greenhouse gas (GHG) emissions**	Greenhouse gas emissions equivalent	none	**< 23,148** tCO_2eq
2	**Global Health Impact (GHI) training : Basic Module**	Number of staff attend the GHI **Basic Training Module**	Total number of all staff	**100%**
3	**Global Health Impact (GHI) training : Specific Module**	Number of staff attend the GHI **Specific Training Module**	Total number of all staff	**100%**
4	**Electricity Consumption**	Electricity consumption (kWh)	Air condition area (m^2) x days	**< 0.82** kWh/ m^2/day
5	**Water Consumption**	Water consumption (unit)	**FTE* x days** *FTE: Full-time Equivalent	**≤ 0.21** m^3/ head/day
6	**% Waste Recycle**	Recycle waste (kg)	Recycle waste (kg) + General waste (kg)	**25%**

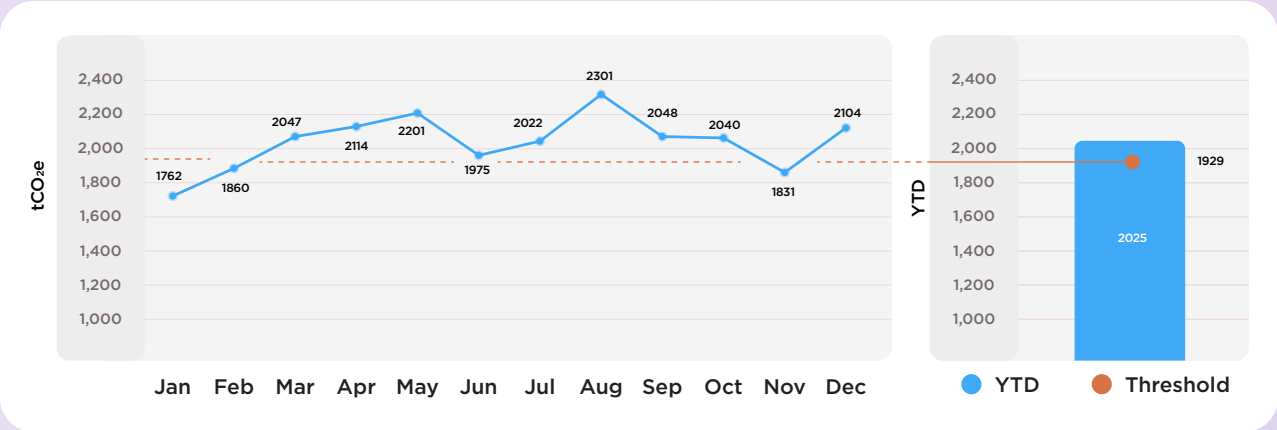
Metric 1 : Greenhouse Gas Emissions

(Target: Less than 1,929 tCO_2e per month)

The Hospital monitors greenhouse gas (GHG) emissions under Scope 1 and Scope 2, calculated in terms of carbon dioxide equivalent (tCO_2e) and reviewed on a regular basis.

In 2025, average emissions were maintained at 2,025 tCO_2e per month, reflecting performance close to the established target. As emissions reduction initiatives under the Committee's action plan commenced in March, the full quantitative impact is not yet fully reflected in the year-to-date results.

Emissions analysis indicates that electricity consumption accounts for 88% of combined Scope 1 and Scope 2 emissions, highlighting energy management as a key focus area for further emissions reduction.



Metric 2 : Green Training – Basic Level (Target: 100%)

The Hospital assesses workforce capability development in sustainability based on the percentage of personnel, including staff, physicians, dentists, and contracted service providers, who have completed the Green Training: Basic Level, relative to the total workforce.

Results demonstrate a high completion rate, reflecting strong awareness and engagement in advancing the Hospital's sustainability agenda. Opportunities for improvement have been identified among certain part-time personnel and specific

medical specialties, and more flexible training formats will be implemented to increase participation and support future targets.

Personnel	GHI 1: Basic Knowledge about Climate Change and Global Health Impact	GHI 2: • BDMS Sustainable Strategy • Climate Impact and Healthcare Readiness
	Completed Training (%)	Completed Training (%)
Full-time Staff	98.0%	94.4%
Part-time Staff	93.2%	83.3%
Full-time Physician and Dentist	53.4%	58.4%
Part-time Physician and Dentist	16.9%	16.9%
Contracted Kitchen Staff	98.9%	100%
Contracted Housekeeping Staff	100%	100%
Contracted Laboratory Technicians	100%	100%
Contracted Security Staff	100%	100%

Metric 3: Green Training – Specific Level (Target: 100%)

The Hospital assesses the percentage of personnel in target professional groups—including physicians/dentists, nurses, pharmacists, radiology professionals, contracted kitchen staff, contracted housekeeping staff—who have completed the Green Training: Specific Level.

Specific Professionals	Topics and Completed Training (%)
Physicians/Dentists	1. Enrolling in sustainable practices as a Physician 2. GHI standards and Strategies of reducing Greenhouse Gas Emissions 3. Waste reduction & Waste sourcing for Physician
Full-time	**65%**
Part-time	**18%**
Nurses	1. Waste reduction and Waste sourcing for Nurse 2. Low-carbon model of care for Nurse
Full-time	**100%**
Part-time	**100%**
Pharmacists	1. Principle of sustainable healthcare in pharmacy practice: for Manager and Head of Department 2. Waste sourcing for Pharmacist and assistance 3. Eco-Friendly Pharmacy: Sustainable Equipment & Medications: for Pharmacist and assistance
Full-time	**100%**
Part-time	**100%**
Radiology Professionals	1. Waste management in radiology 2. Life cycle assessment in radiology 3. The environmental impact of energy consumption and carbon emission in the radiology department
Full-time	**100%**
Part-time	**100%**

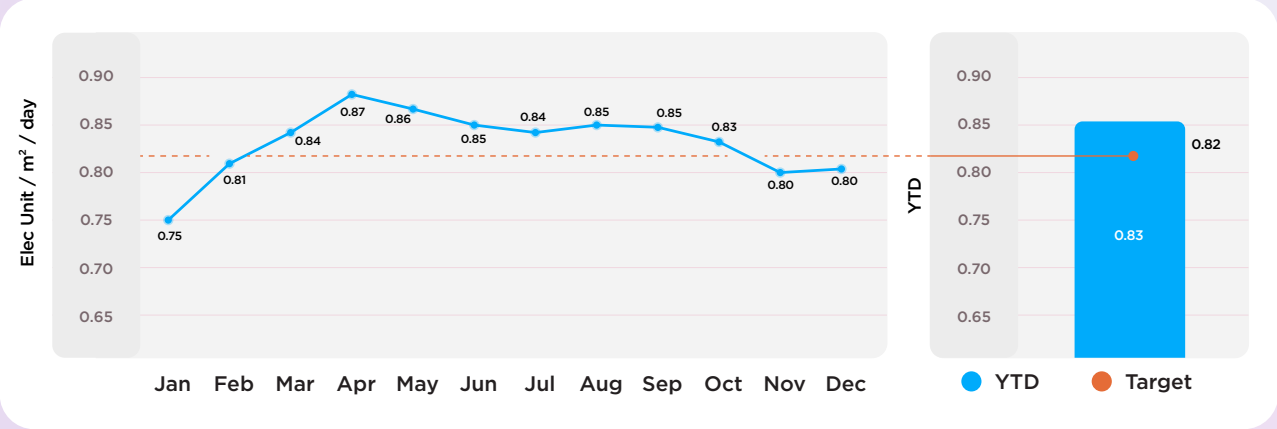
Contracted Kitchen Staff	1. Sustainable Culinary Practices 2. Food Waste Management 3. Nutrition and Sustainability 4. Sustainable Ingredient Sourcing & Menu Planning
Full-time	**100%**
Part-time	**100%**
Contracted Housekeeping Staff	1. Green Cleaning Practices 2. Waste Management and Recycling 3. Energy Efficiency in Housekeeping 4. Sustainable Linen Management
Full-time	**100%**
Part-time	**100%**

Results show that most targeted personnel have successfully completed the training, demonstrating the integration of sustainability knowledge into professional practice. Flexible, role-tailored learning approaches will be introduced to increase participation and meet future targets.

Metric 4: Electricity Consumption (Target: Less than 0.82 kWh/m^2/day)

The Hospital monitors electricity usage based on the consumption per air-conditioned area per day, assessed monthly.

In 2025, average electricity use was 0.83 kWh/m^2/day, close to the target of 0.82 kWh/m^2/day. Variations were primarily driven by changes in air-conditioning demand due to external temperatures and fluctuations in patient volume.



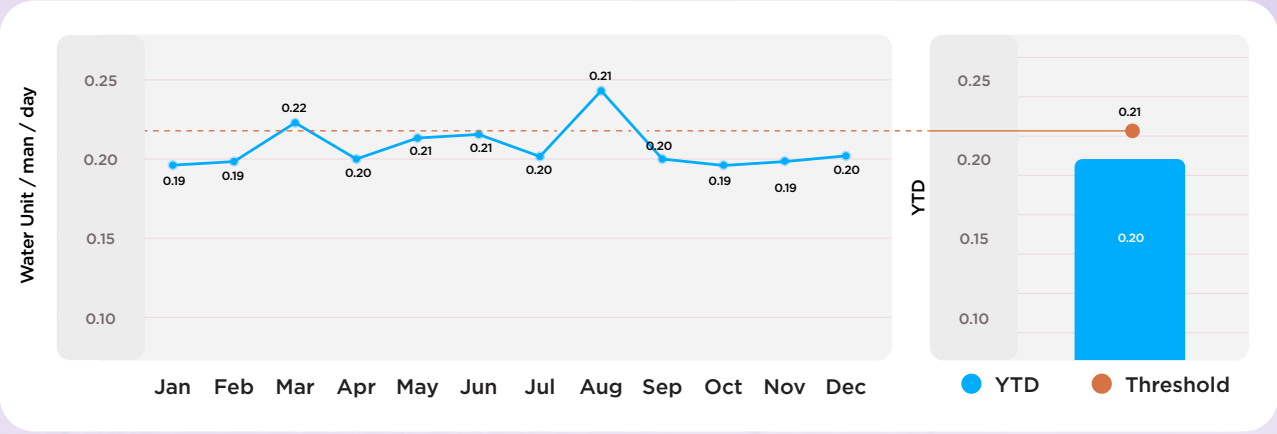
Ongoing energy management and GHG reduction initiatives are in place, with detailed measures and outcomes presented later in the report to demonstrate the Hospital's commitment to improving energy efficiency.

Metric 5: Water Consumption (Target: Less than or equal to 0.21 m^3/head/day)

The Hospital monitors water usage based on water consumption per staff and patient per day, assessed monthly.

In 2025, average water use was 0.20 m^3/head/day, within the target of < 0.21 m^3/head/day, reflecting efficient water resource management.

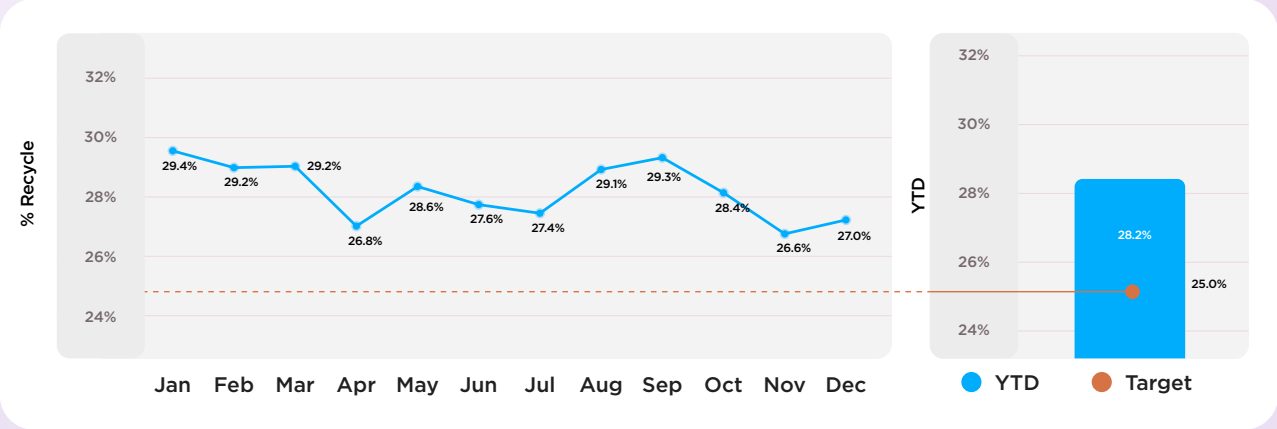
This performance results from various initiatives and measures to optimize water use, with further details on actions and outcomes presented later in the report.



Metric 6: Waste Recycling Rate (Target: 25% per month)

The Hospital monitors and evaluates waste management by calculating the percentage of waste sent for recycling (kg) relative to the total waste generated, including both general and recyclable waste, with monthly assessments.

In 2025, the average recycling rate was 28.2% per month, exceeding the target of 25%, reflecting the effectiveness of the Hospital's waste management initiatives.



This achievement stems from a strategic approach where each department sets its own unit-level indicators for waste segregation. Combined with ongoing education through online and offline channels, this has fostered engagement and a strong culture of environmental responsibility among staff and patients.

Strategic Initiatives for 2026

Bangkok Hospital Headquarters remains committed to reducing greenhouse gas emissions by 30% by 2030 and laying the foundation for a long-term Net Zero pathway. This will be achieved through integrated efforts in energy management, environmental stewardship, and innovation, driven by the ongoing **Global Health Impact** program to minimize environmental impact and create shared value for all stakeholders.

In 2026, the Hospital will focus on enhancing energy efficiency, increasing the use of clean energy, managing resources and waste sustainably, and promoting innovation and collaboration across the supply chain.

Key initiatives planned for 2026 include:

1. **Desflurane Reduction Program (Phase 2)**
2. **MRI Reduction Program**
3. **EV Bus Green Mobility Initiative**
4. **Water Flow Optimization (Phase 2)**
5. **Cooling Tower Fan Upgrade for Energy Efficiency**
6. **Solar Panel Expansion (Phase 3)**
7. **EcoSuction Program to Reduce Infectious Waste from Surgical Suction Canisters**
8. **No More CDs – Digital Transition (Phase 2)**

Conclusion

Throughout 2025, Bangkok Hospital Headquarters remained committed to delivering high-quality healthcare services while upholding environmental and social responsibility. This commitment was demonstrated through the implementation of concrete initiatives in energy management, environmental stewardship, innovation, and workforce engagement.

The Hospital's Global Health Impact efforts go beyond reducing environmental footprints and greenhouse gas emissions. They also reflect effective resource management, enhanced safety for patients and staff, and the creation of shared value for all stakeholders.

Bangkok Hospital Headquarters will continue advancing along the path of sustainable development, with a clear focus on greenhouse gas reduction and laying the groundwork for a long-term transition toward Net Zero. The Hospital firmly believes that caring for people and caring for the planet can progress hand in hand, ensuring a responsible, resilient, and sustainable healthcare system for present and future generations.

Message of Appreciation

On behalf of the Global Health Impact and Sustainable Development Committee of Bangkok Hospital Headquarters, we would like to express our heartfelt gratitude to everyone who contributed to the success of our environmental sustainability initiatives.

We sincerely thank our leadership team, physicians, nurses, pharmacists, healthcare professionals, administrative and support staff, as well as contracted personnel for their contributions to sustainability initiatives. Your dedication, expertise, and commitment have been vital in driving our “Green” projects forward, demonstrating that collaboration across all levels of the organization is the key to achieving meaningful environmental impact.

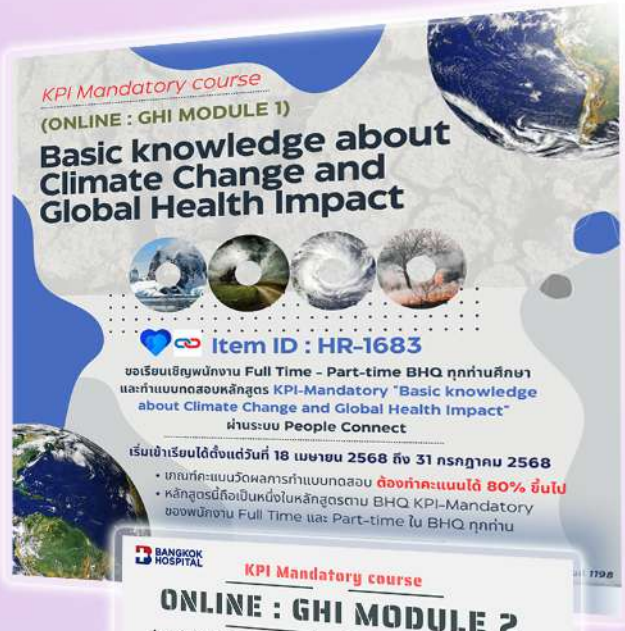
Thank you for your unwavering support and for being the driving force behind our journey toward a responsible, resilient, and sustainable healthcare system.

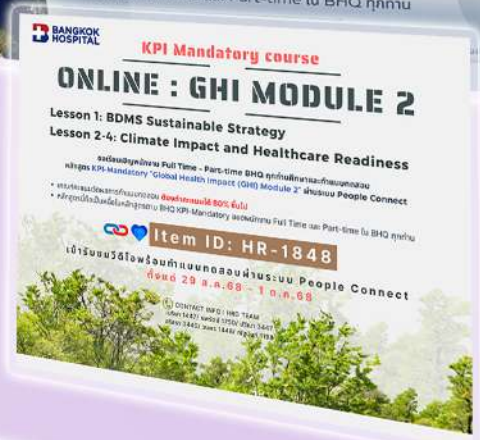
Bangkok Hospital Headquarters

“Caring for Your Health. Caring for Our Planet”

Appendix

Internal Activities





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