

- o Clinical staff will learn about alternatives to products generating a lot of waste (for example, nonsurgical gloves) or to anesthetic gases with high carbon emission intensity (for example, desflurane).
- o Department managers will learn specific leadership competencies to support them and their teams to reduce waste and include sustainable behaviors in their daily practice.
- o Cleaning employees will learn about the health and environmental impact of chemicals used in cleaning products and about the efficacy of alternatives.

“Green training” and engagement can have other beneficial outcomes for the organization, including the following:

- Providing a sense of challenge, which motivates employees to engage
- Greater satisfaction in jobs, when supported by the employer
- Satisfying professional experience for employees
- Responding to younger professionals’ need to know their organization is positively engaged in these issues and help with workforce retention

Therefore, they can boost company morale, lower turnover rates, and increase the organization’s overall performance and quality of service.

Measurable Elements of GHI.02.00

1. All medical and nonmedical staff across the hospital undergo specific yearly training sessions, aimed at providing basic knowledge about climate change, its impact on human health, and good practices they can implement for environmentally sustainable and resilient health care.
2. Hospital leaders communicate to employees about environmental sustainability and the organization’s low-carbon and resilient care goals and activities.
3. A process is implemented for collecting staff ideas, which are reviewed by the lead person for sustainability to identify potential new initiatives and priorities.
4. ⑩ A module on climate change, environmental sustainability, and low-carbon and resilient care is included in new employee orientation/onboarding. (*See also* SQE.01.06, ME 1)

Use of Environmental Resources, Green Operations, and Processes

Standard GHI.03.00

Hospital leaders develop and start to implement a plan to measure and reduce the use of materials and environmental resources, including energy, water, and emissions.

Intent of GHI.03.00

Hospitals must work across all emission scopes to address decarbonization and increased resilience and environmental sustainability. It is also essential to consider the use of natural resources as well as of materials. To this end, one of the primary tasks of the designated lead person for environmental sustainability should be to define a plan. This can be achieved through the following steps:

- Establishing and understanding the baseline for the scope of assessment and action
- Defining and prioritizing short- and long-term interventions
- Developing a plan for action and improvement
- Measuring, tracking, evaluating, and reporting the improvements toward the defined targets

For any hospital, the origins of carbon dioxide emissions, or greenhouse gas (GHG) emissions, can be classified into three scopes:

- Scope 1 emissions are from sources directly owned or controlled by an organization (for example, on-site fuel combustion in boilers, furnaces, vehicles).
- Scope 2 are from purchases and use of electricity, steam, heating, and cooling generated elsewhere. By using the energy, an organization is indirectly responsible for the release of these GHG emissions.
- Scope 3 emissions include indirect emissions caused by an organization's value chain, in the upstream and downstream activities of an organization. Among others, this includes purchased goods and services, transportation, and distribution (upstream and downstream) as well as waste disposal.

Hospitals can conduct a carbon footprint assessment to identify emission “hotspots” that require deeper decarbonization actions. Several carbon footprint calculation tools exist for the health care sector, for hospitals in low- to high-income countries. Collecting the data and completing the full process may take several months. Therefore, it is highly recommended to implement measures that will accelerate engagement and decarbonization before finalizing the carbon footprint assessment.

Key areas of resource management are presented below:

Power generation and electricity are essential to run any health care facilities and to provide safe and high-quality care. However, climate change (including through disruptive climate events) will negatively impact access to electricity, and forces organizations to consider the way energy is being produced and used. Good planning and interventions can make hospitals more resilient to such events while reducing their carbon emissions:

- Some facilities invest in on-site power generation, rather than purchasing that energy through the grid. Common benefits of on-site power generation are the reduction of energy cost, reduction of greenhouse gas emissions (particularly in the case of renewable energy generation), and improved reliability of supply.
- All organizations should aim to consume and produce energy from renewable energy sources. Renewable energy is derived from natural sources that are replenished at a higher rate than they are consumed. Common sources of renewable energy are sunlight, wind, geothermal energy, hydropower, ocean energy, and bioenergy. On the other hand, fossil fuels (coal, oil, and gas) are nonrenewable resources that take hundreds of millions of years to form and that can cause harmful greenhouse gas emissions, such as carbon dioxide.
- Rethinking buildings and infrastructure, including architecture, service designs, and space utilization, will also highly contribute to optimizing the use of energy while making the hospital more resilient and sustainable.

Climate change is accelerating water-related hazards and scarcity. Although some areas may be more impacted than others, organizations around the globe must implement solutions to conserve it. Health care facilities are directly concerned by water-safety issues as they will impact health care delivery, hygiene, and sanitation within the organization. Therefore, hospitals are recommended to measure their water consumption and implement solutions to optimize its supply and conservation. Good sewerage infrastructure and safe use of wastewater must also be managed, as they can increase the hospital's resilience while contributing to water, sanitation, and hygiene (WASH) targets.

Carbon emission reduction can also occur during health care delivery. A *low-carbon model* of care is a form of care delivery that generates less carbon emissions than alternatives available. It means that the carbon emissions impact of care delivery has been estimated to explicitly favor services or interventions that generate less carbon emissions and reduce energy use. A low-carbon model of care provision will be better at preventing illness, be leaner in service design and delivery, and promote the use of lower-carbon technologies (for example, telehealth, app-based). This carbon emission reduction also applies to pharmaceuticals, inhalers, and anesthetic gases. For example, Scotland has banned the use of desflurane due to the increased threat it poses to the environment. In addition, greening operating theatre practices can reduce energy use, supply usage, and waste generation which will lead to financial savings.

Supplies, and therefore, waste and emissions from pharmaceuticals and other chemicals used for treatments should also decrease through prescribing practices. It involves giving information to patients and clinical staff on the best treatment, with the use of the lowest effective dose for the shortest period of time, including drugs that have the smallest carbon footprint. Optimizing medications also involves addressing unnecessary prescribing, which reduces errors. Low-carbon prescriptions also include the use of alternatives such as psychotherapy, green prescribing, social prescribing, and lifestyle prescriptions.

Soft facility management, including cleaning practices, linen and laundry services, and waste management, also present many opportunities to reduce the use and waste of materials, energy, and chemicals. For example, cleaning can become chemical-free by using innovative microfiber mops and an adapted cleaning technique. This method can be fully applied or partially applied depending on the area of the hospital and safety-related issues. Benefits include cost savings, carbon reduction, decreased toxicity of wastewater, and improved health and well-being of patients and employees due to the reduction of respiratory diseases caused by chemical products.

For all of the above, alternatives keep emerging, and innovative approaches will be necessary to continue this effort.

Measurable Elements of GHI.03.00

1. Ⓛ Hospital leaders and managers develop a written measurable plan including targets and the monitoring thereof to reduce waste, carbon emissions, and the use of environmental resources.
2. Ⓛ The percentage of renewable energy (bought or self-produced) compared to the total energy consumption is identified and reported to the board on a yearly basis.
3. Hospital leaders implement actions to optimize water conservation and report the amount of water conserved to the board on a yearly basis.
4. Hospital leaders and managers can demonstrate yearly progress regarding the reduction of carbon emissions or negative environmental impacts of operations in at least one of the following soft facilities management areas:
 - Waste management
 - Cleaning practices
 - Linen and laundry services
5. Hospital leaders and managers contribute to reducing the carbon intensity of food and catering supplies; for example, by sourcing at least 50% of locally produced food whenever practicable and by providing vegetarian options on a daily basis.
6. Clinical practices are evaluated to reduce the environmental impact.

Procurement and Supply Chain

Standard GHI.04.00

Hospital leaders implement actions to reduce the environmental impact of the supply chain across all operations and identify areas to reduce the unnecessary use of supplies within the hospital.

Intent of GHI.04.00

It is estimated that medicines, medical equipment, and other supply chains can represent between 60% and 80% of a hospital's carbon footprint. This includes production, transport, and use and disposal of goods and services. However, despite those emissions being indirect, hospitals can play an active role in decreasing them. For example, this can be achieved by enhancing the way resources are used (for example, reduce, reuse, or even avoid), substituting for low-carbon and/or reusable initiatives, sourcing locally, working with suppliers to set targets, and leveraging their purchasing power to demand more sustainable products.