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**Assessing the Carbon Footprint of Healthcare
Facility Service Delivery:** A Case Study of
Aga Khan Hospital, Mombasa, Kenya

Introduction



Healthcare operations significantly impact the environment through carbon emissions and resource consumption.



Assessing emissions is crucial for understanding the carbon footprint of healthcare facilities and identifying areas for improvement.



Managers play a pivotal role in driving sustainability efforts, setting goals, and fostering a culture of environmental responsibility within healthcare organizations.

Aim

- This study was conducted to **monitor** Green House Gas Emissions (GHGe) in the private health facilities in Aga Khan Hospital, Mombasa.
- Main focus on operations and service delivery.



Site Description



96-bed hospital



Located in the urban area of Mombasa city.



Primary, secondary, and some tertiary level care.



It features emergency services available 24/7, general medical services, specialist clinics, and high-tech diagnostic services


Approach

- **AKDN Health Carbon Management Tool:**








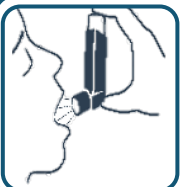

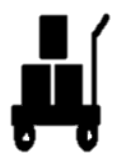
- Developed by the Aga Khan Development Network for calculating carbon emissions
- Widely used by HCFs in low- and middle-income countries.

- **Method:**

- Scope 1: Direct emissions from facility activities; Scope 2: Indirect emissions such as energy consumption & Scope 3: Indirect emissions from products/services supporting operations.
- The study uses a bottom-up approach to data collection, i.e., actual resource use data on quantities of fuel, energy and other resources consumed and reported by facilities;

			
Tool	Additional support on how to use the tool can be found in the associated guide	The AKDN Carbon Management Tool is continually being improved and updated with feedback from its users. For guidance on its use, to share feedback and to access future updates please contact:	healthcarbonfootprint@
	All users must commit to acknowledging AKDN and the use of this tool wherever results are shared or published		
Key	Step 1	Complete all pink cells on this 'Cover Sheet'. The selecting the appropriate country on this sheet is required to ensure that the carbon calculations on later sheets accurately reflect country specific variables. Only report data for one country and one agency/organisation per workbook.	
	Step 2	Complete all pink cells on the 'Buildings' sheet, maximum of 30 buildings per workbook. Input the names of all buildings/sites or groups of sites to be reported. Entering floor area data here enables carbon intensity benchmarking to be populated on the 'Building Totals & benchmarking sheet'	
(dark pink)	Step 3	Complete the relevant pink cells on as many sheets as you have additional resource use sheets covering energy, anaesthetic gases, refrigerants, waste, water, inhalers, contractor logistics and construction. You may not need to complete every sheet. Use the 'Narrative' box at the top of each sheet to explain any significant changes since last report. Inputting your organisations spending data on the Procurement sheets will enable you to estimate the emissions in your supply chain. With this you can identify carbon hotspots and priority suppliers to engage. To avoid common errors: 1. Avoid copying and pasting data or text into the sheets. If you do, paste as 'values only'. 2. When drop down menus are available they must be used 3. Do not change the names entered for buildings once you have started to complete the sheets.	
	Step 4	Complete/update relevant pink cells on the 'Actions Tracker' sheet to highlight key actions that are currently underway or planned.	
Note: Only report data for one country per workbook			
End:			
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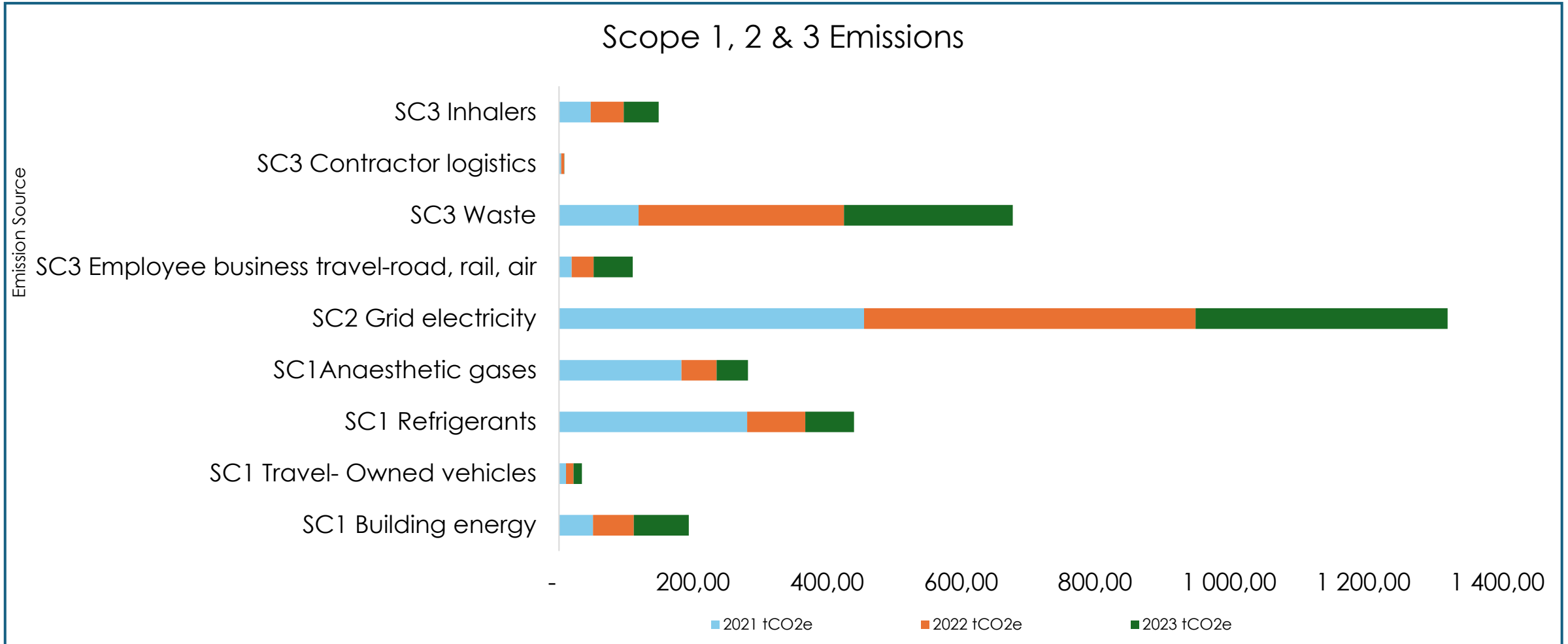
General Bottom-Up Data Required

	Electricity	KWh of electricity used in each site		Water	Volumes of water used
	Liquid Fuel	Litres of liquid fuel used for generators, heating or transport		Refrigerants	Kg of refrigerants held in, or used (cooling systems)
	Solid Fuels	Weights of solid or gaseous fuels used		Anaesthetic Gases	Numbers of bottles, cylinders or weight of anaesthetics used
	Travel	Miles travelled in different types of vehicle		Inhalers	Number of inhalers dispensed or prescribed
	Waste	Weights of waste generated		Suppliers	Amount spend with different suppliers

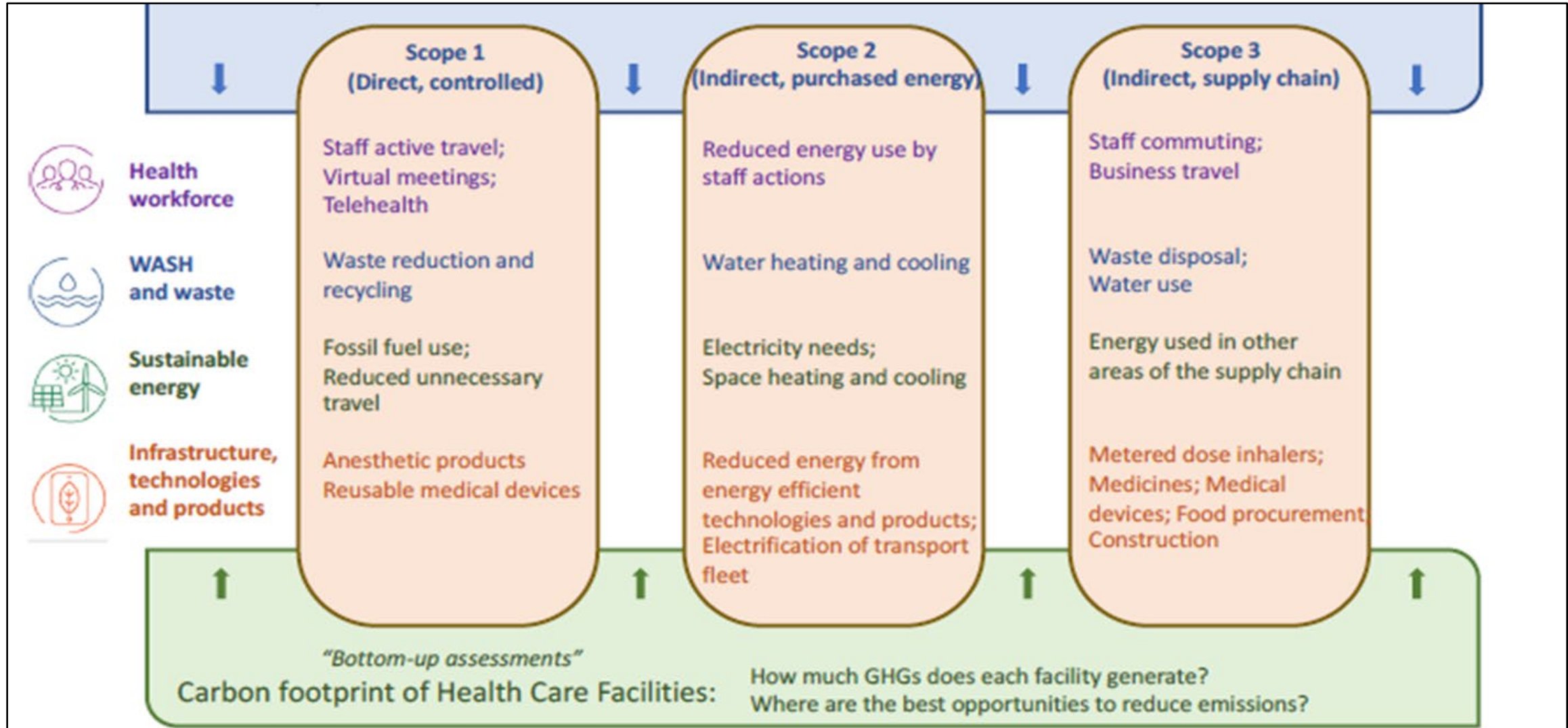
Results: Co2-e Metric Tonnes

Scope Type	Description	2021 (tCO2e)	2022 (tCO2e)	2023 (tCO2e)
Scope 1	SC1 Building energy	50.83	60.79	82
Scope 1	SC1 Travel - Owned vehicles	10.49	11.08	12.62
Scope 1	SC1 Refrigerants	280.56	86.83	72.63
Scope 1	SC1 Anaesthetic gases	182.64	52.58	46.88
Scope 2	SC2 Grid electricity	455.25	494.67	375.87
Total Scope 1 & Scope 2		979.77	705.96	589.99
Scope 3	SC3 Employee business travel-road, rail, air	18.75	32.9	58.19
Scope 3	SC3 Waste	118.85	306.2	251.84
Scope 3	SC3 Contractor logistics	3.26	4.48	0.18
Scope 3	SC3 Inhalers	47.27	49.15	52.19
Total Scope 3		188.14	392.73	362.4
Total - All scopes		1167.91	1098.69	952.4

Key Emissions per Scope



Strategies for Reduction HF Emissions



Worth Notetaking

01

EMISSIONS AT AGA KHAN HOSPITAL, MOMBASA, REDUCED BY 10% FROM 2021 TO 2023.

02

SUSTAINABILITY ACHIEVED DESPITE MAINTAINING PATIENT VOLUMES AND OPERATIONS.

03

IMPLEMENTED SOLUTIONS: WASTE SEGREGATION, UPGRADED AC UNITS, AND EMISSIONS MONITORING.

04

SMART, COST-EFFECTIVE MEASURES INTEGRATED SEAMLESSLY FOR A GREENER FUTURE.

Discussions

Through the monitoring data collected under the study,

- the AKHM was able to reduce their environmental footprint by developing action plans to Net Zero by employing simple, smart, and sustainable measures.

Reducing the carbon footprint of health systems is translated in

- cost savings (such as through energy bills)
- reduction in overall damaging health exposures through a reduction in waste and pollution from health care facility operations.

Conclusion

Encourage monitoring of service delivery emissions and implementation of sustainability initiatives in HCFs.

Develop and Support operational policies that promote environmental sustainability in healthcare.

Call to Action: Urge stakeholders to take immediate action for a sustainable healthcare future.