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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

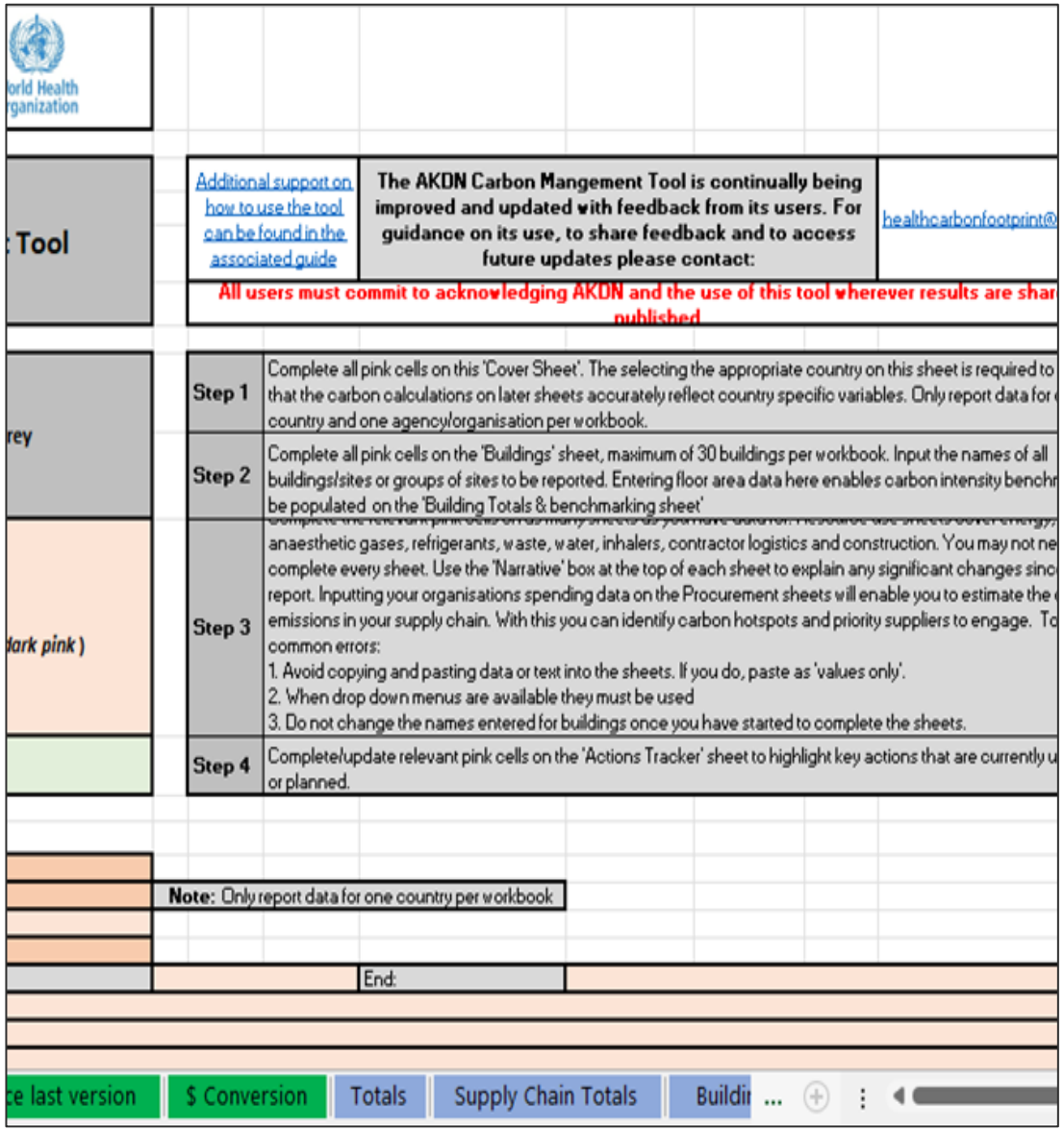
Located in the urban area of Mombasa city.

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;



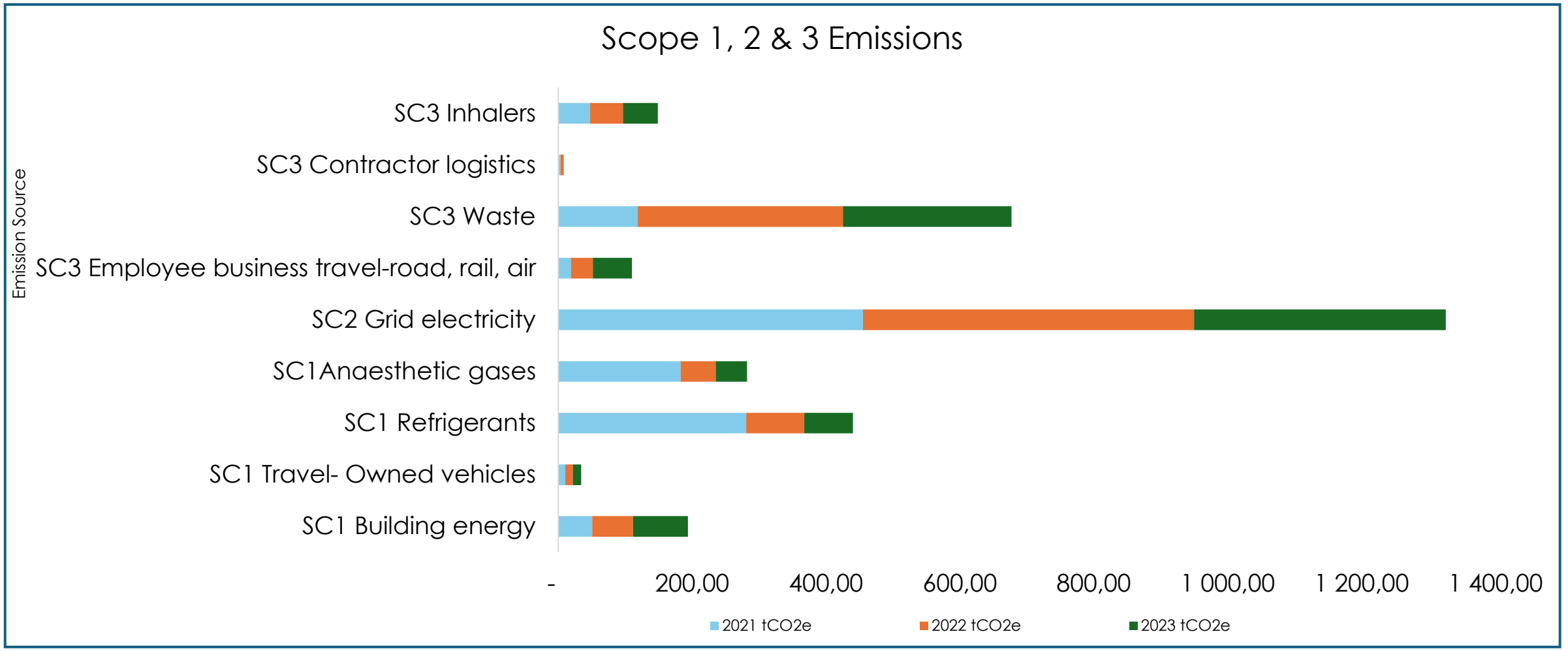
General Bottom–Up Data Required

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

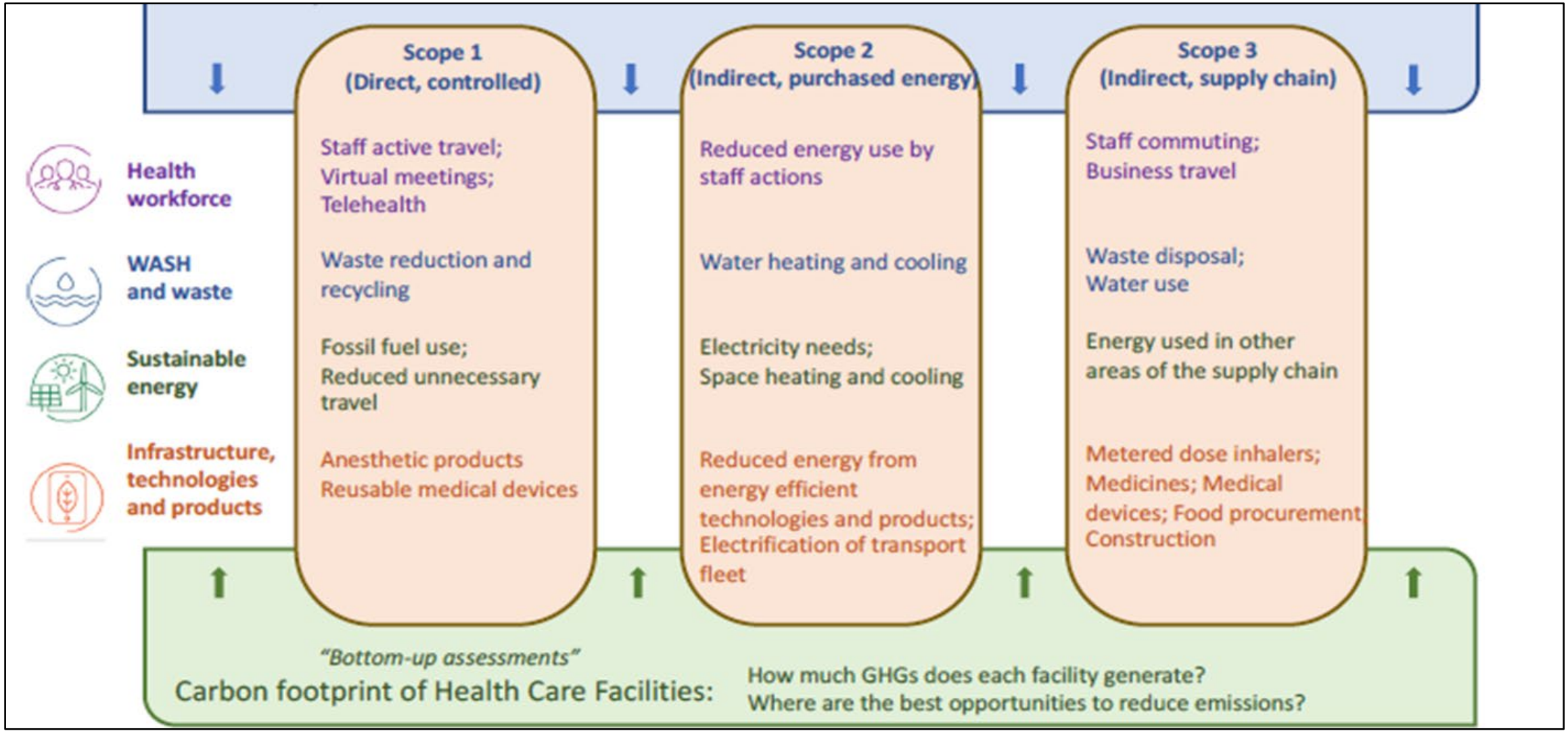
Results: Co2-e Metric Tonnes

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.