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Health care's response to climate change: A carbon footprint assessment of three health facilities in Zimbabwe



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Introduction



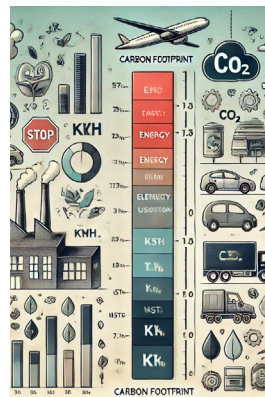
4% to 8% of the total greenhouse gas emissions are from the health sector.



Energy-intensive operations like ineffective waste incineration, lighting, heating, cooling, use of anaesthetic gases, outdated and malfunctioning equipment.



Harm the environment, and adversely impact on service delivery and quality of care.



Quantifying the carbon footprint is essential for developing 'carbon-smart' interventions to mitigate the industry's ecological impact while improving quality of care services.

Objectives

- **To quantify and identity carbon emissions produced by three public health facilities (one district hospital and two health centres) in rural Zimbabwe.**

Scope 1: Direct emissions from owned health sources

Resources include building energy, anaesthetic gases, refrigerants, waste and travel.

Scope 2: Indirect emissions from purchased energy.



Resource include purchased and consumed grid electricity.

Scope 3: Indirect emissions from supply chains and transportation.

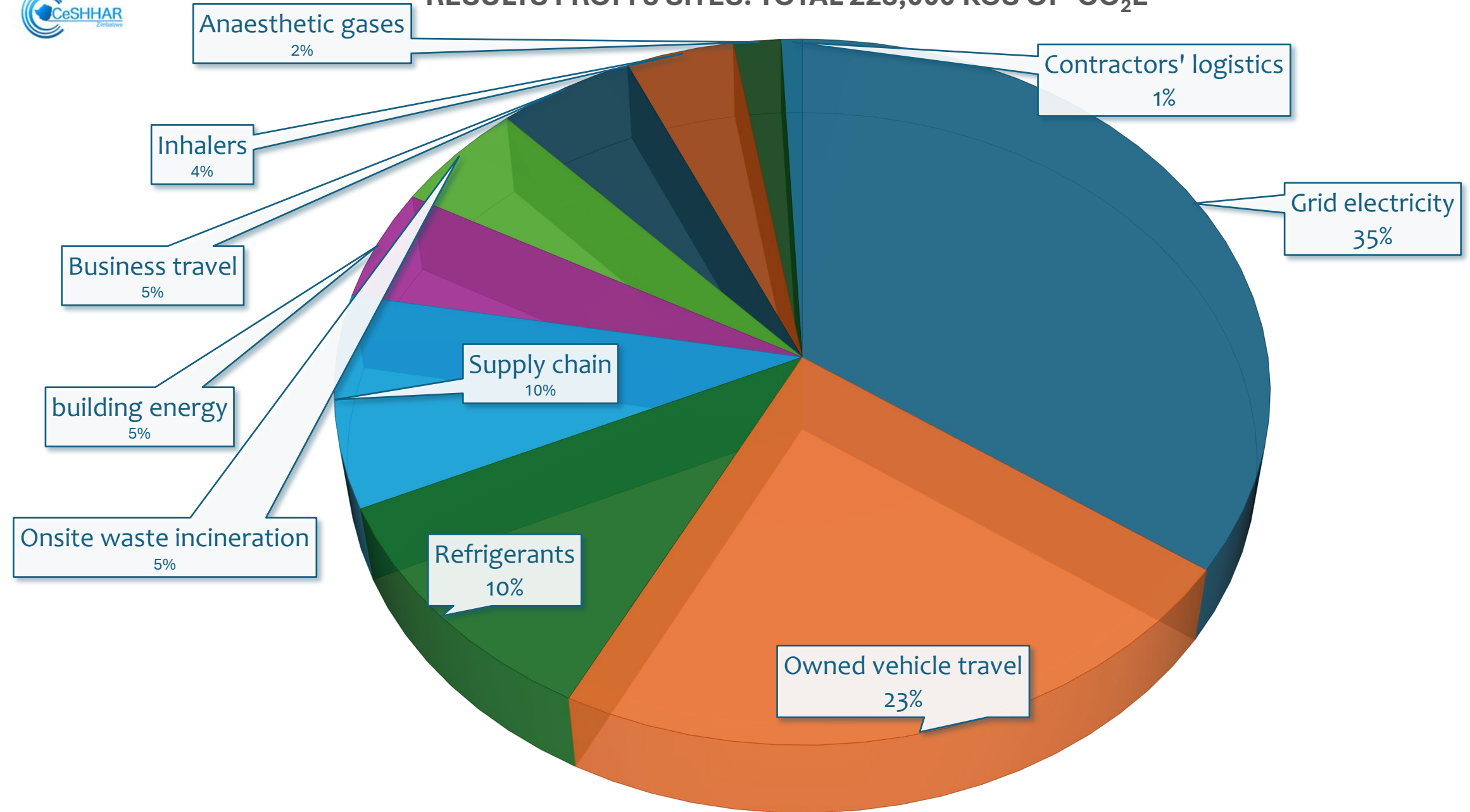
Resources include inhalers, supply chain, contractor logistics, construction materials, employee business travel and water.

Methods

- Aga Khan Development Carbon Management tool to **measure** and **calculate**.
- **Excel-based calculator** which was field-tested and verified in **8 countries including SSA** and over **800 facilities**.
- Endorsed by WHO.
- Converts **financial** and **accounting records** into carbon equivalents which are categorized by **scopes and resource** types.
- Data was collected from **Jan to Dec 2023** by a trained research officer from various department heads with assistance from hospital staff.
- Some resource data collection such as waste was collected **daily** anaesthetic gases **monthly** and supply chain **quarterly**.
- Mt Darwin Hospital primary and referral facility, provides general medical and surgical services and emergency care **296 beds**.
- Chitse is a primary care health centre with **4 beds** can be expanded to 10.
- Dotito is a primary care health centre with **4 beds**.

 									
AKDN Carbon Management 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:			healthcarbon@akdn.org			
All users must commit to acknowledging AKDN and the use of this tool wherever results are shared or published.									
Headings and guidance are marked grey		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.							
Input cells are marked pink (Input cells essential for calculations are in dark pink)		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 benchmarks to be populated on the 'Building Totals & benchmarking sheet'.							
Output cells are marked in green		Step 3 Complete the relevant pink cells on as many sheets as you have data for. Resource use sheets cover energy, travel, 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 the last report. Inputting your organisations spending data on the Procurement sheets will enable you to estimate the carbon 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.									
Details of reporting organisation									
Agency/organisation name:									
Country:		Zimbabwe		Note: Only report data for one country per workbook.					
Region (in country):									
Reporting Period (months):		Start:				End:			
Date Prepared:									
Name of person preparing report:									
Phone number:									
Email address:									
Accounting approach:		Operational Control							
Author:		Jerome Baddley CEnv FIEMA							
Created:		13/10/2020							
This version 1.6.2		30/3/2023							

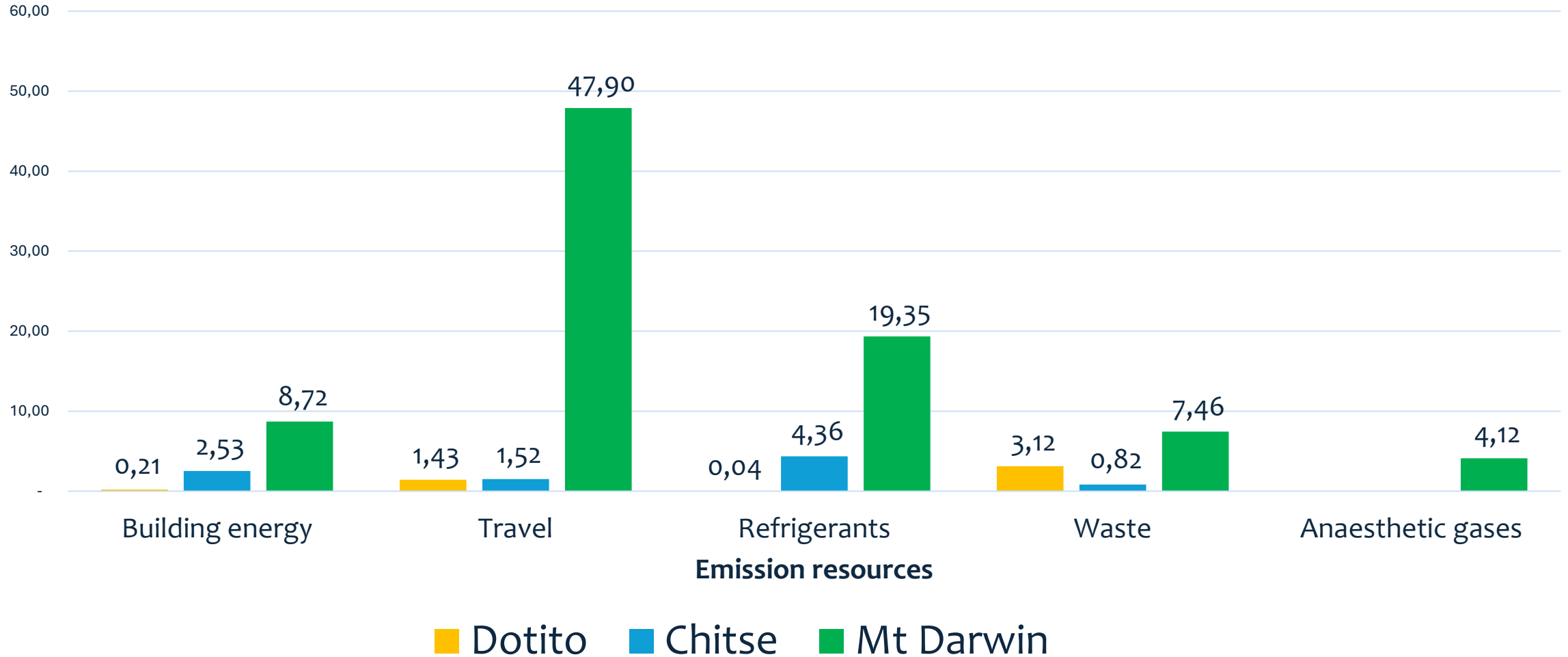
RESULTS FROM 3 SITES: TOTAL 223,000 KGS OF CO₂E



Scope 1 results in Metric Tonnes

Jan 2023 to Dec 2023 CO₂e emissions

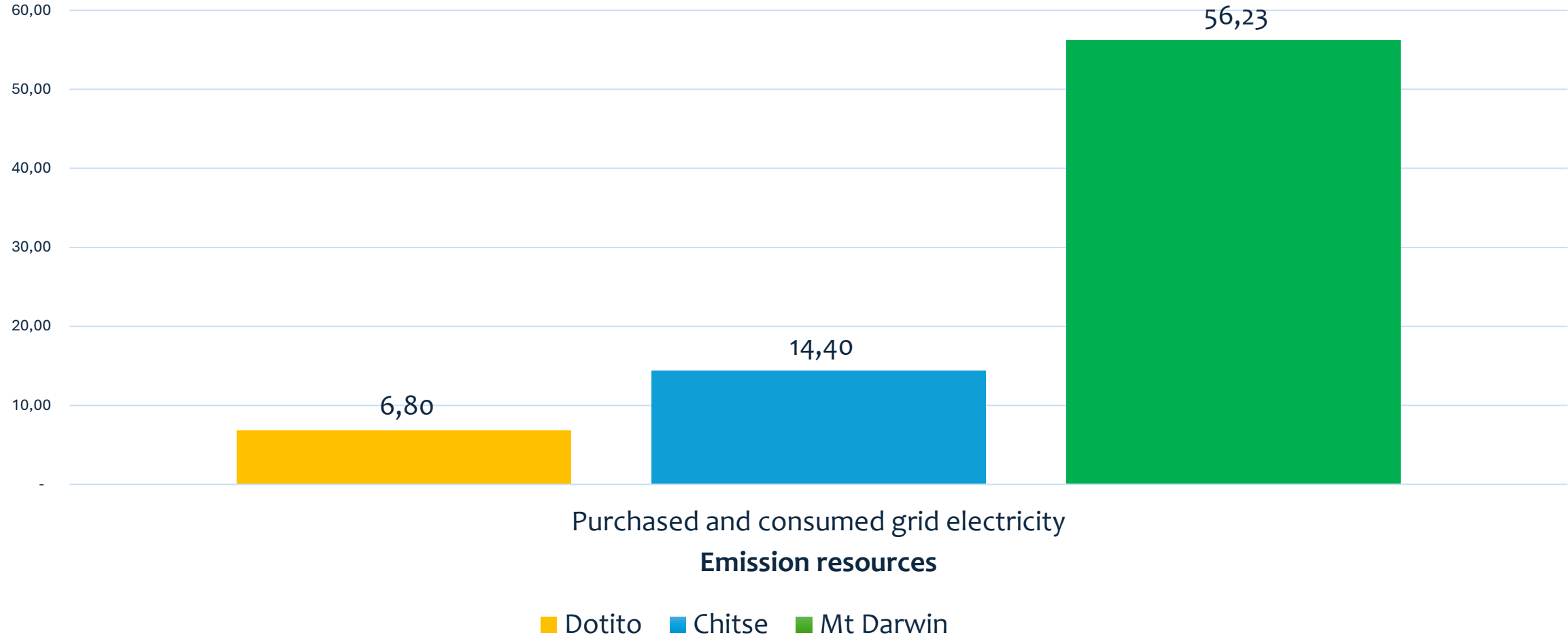
Carbon emissions (tonnes CO₂e)



Scope 2 results in Metric Tonnes

Jan 2023 to Dec 2023 CO₂e
emissions

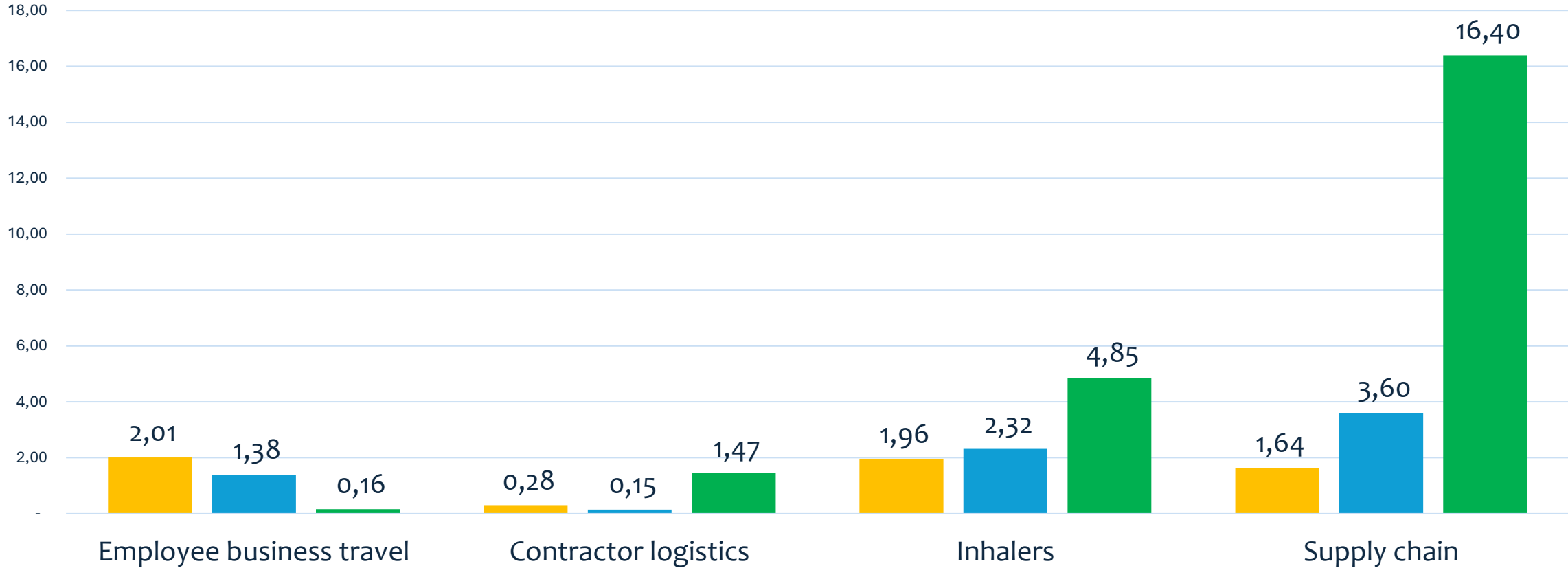
Carbon emissions (tonnes CO₂e)



Scope 3 results in Metric Tonnes

Jan 2023 to Dec 2023 CO₂e emissions

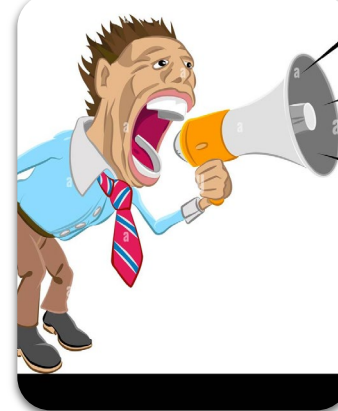
Carbon emissions (tonnes CO₂e)



Emission resources

■ Dotito ■ Chitse ■ Mt Darwin

Implications



Quantifying emissions in public health facilities is feasible if resources are available

Renewable energy will boost climate resilience and environmental sustainability, while improving continuity of services

In future “low carbon transport” options will help save financial resources and channel them to services which improve patient care

Awareness of positive perceptions, attitudes, and perspectives is essential for sustainable practices

Enhance understanding of emissions. As of the year 2023, emissions were “relatively low”

Overall, supports global initiatives to monitor the health system’s footprint and inform decisions towards improved patient care and cost savings interventions.

Acknowledgements

- HIGH Horizons has received funding from the European Union's Horizon Framework Programme under Grant Agreement No. **101057843**. Project partner LSHTM is funded by UKRI Innovate UK reference number **10038478**.
- HAPI received funding from Wellcome Trust **226758/Z/22/Z**

