



Aga Khan Health Services

Calculating the carbon footprint of AKHS operations October 2023

Measuring the Carbon Footprint of Health Facilities

In order to reduce the carbon footprint of Aga Khan Health Services (AKHS) facilities, it had to first be measured. But at the beginning of AKHS' efforts in 2019, existing tools, such as those available for calculating the carbon emissions from electricity and transport, were found to be far from intuitive. Such tools required prior knowledge and following instructions for each data set. Furthermore, available tools did not cater to the range of contexts, units and items that applied in Lower Middle-Income Countries (LMICs) nor did they include elements essential to calculate the footprint of the health sector. Had AKHS worked with what existed at the time, at least eight different products would have been needed.

Additionally, many used out-of-date carbon conversion factors or lacked data for countries where AKHS works. The quality and consolidation of outputs designed to formulate a clear baseline and measure targeted activity would in itself have required considerable expertise. There were also no available tools at the time for some important products, such as inhalers and, most significantly, the supply chain – which was known to account for upwards of 70 percent of the health sector footprint in other countries where this had been previously estimated. Many tools also depended on internet access and would therefore have been difficult to complete if there were interruptions in power supply.

A decision was therefore taken that AKHS would develop a tool that would work in LMICs. The tool would be transferable to other stakeholders within health as well as sectors other than health. The design specifications for the tool included: an all-in-one tool for all data sets that uses readily available data, is simple to use without any prior knowledge in the field, and functions in a way that educates users, including the provision of costing information and diagnostic dashboards to help identify hotspots and inform users about corrective actions.

Developing a Tool

Through a joint initiative by the Aga Khan Health Services and Aga Khan University, such a tool was developed and tested through several cycles in the field. The tool consists of an Excel-based calculator. It converts readily available data from health facilities and community-based programmes into instant carbon reports. These reports, which are based on international best practice and current carbon conversion factors, then support local and central decision making and planning.

Inputs include data on energy use (electricity, diesel and the full range of local fossil fuels/gas as well as solar), travel, anaesthetic gases, inhalers, contractor logistics, waste, and water and the amounts spent on the different types of items procured. The tool also allows for costing the impact of making changes.

Perhaps most importantly, the tool takes minimal training for non-specialists to master. This was an advance, particularly as international conventions for reporting carbon emissions categories data by “Scopes”* which many non-specialists find hard to grasp. AKDN's tool does not require knowledge of the theory of “Scopes”: it automatically organises data by Scopes, through the use of simple “Yes”/ “No” answers to questions, such as: “Is this building owned by your organisation?”

The tool generates diagnostic dashboards to identify emissions “hotspots” at overall operations and facility levels. Prompts and notes also help to guide users to consider some of the ways in which they may reduce their emissions.

It is a small file, rather than a web-based calculator. This means that the tool can be easily shared by colleagues over email and completed offline – an important consideration for many of areas where internet access is unreliable.

Since the launch of the first version of the tool in 2020, all Aga Khan Health Service country operations (397 health facilities and hospitals in eight countries) now use it to report data on a quarterly basis.

The results

From the most recent data, quarterly emission for AKHS operations were 14,087t CO₂e. This figure includes indirect emissions from our procurement (85%) and 2,732t CO₂ for activities directly related to our operations.

Carbon footprint from quarterly reports

The figure below (Fig 1) shows the country level split of the emissions which are reported in detailed quarterly reports from our country operations. Quarterly reporting covers all Scope 1 and 2 emissions, some Scope 3 emissions and a range of other environmental indicators. Some high carbon procured items, such as construction materials and inhalers, are also reported quarterly. AKHS uses both approaches to derive the most complete picture possible, while also ensuring that no items are double counted.

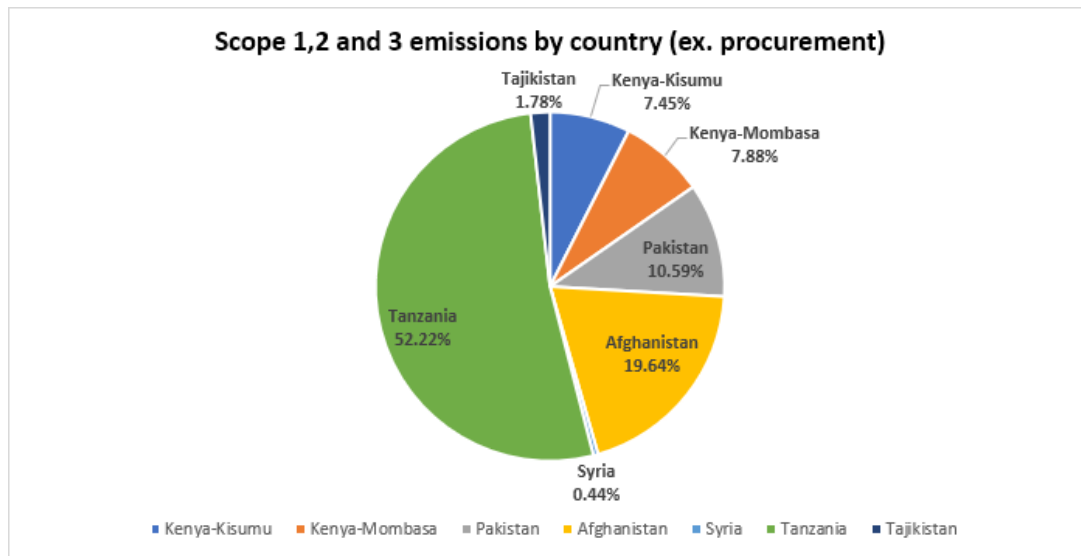


Figure 1 Legend: The pie chart above contains comprehensive data from Scope 1 and 2 and some of the data for Scope 3. Scope 1: Direct emissions from owned and directly controlled sources e.g., vehicles & generators; Scope 2 - Indirect emissions from purchased electricity; and some information from Scope 3 indirect emissions, such as from high carbon purchased items e.g., inhalers, construction materials, fuel used for rented buildings, travel using public or commercial transport.

Illustrations of results generated by the tool

a. Quick start (rough) estimates

Using the 'quick start' tab, a rough 'top down' estimate is provided based on a simple entry of financial data for operations. The figures are adjusted in line with available sector-level data averages from the region of operations.

b. Totals by Scopes

Following the entry of actual data, the tool generates graphic summaries (see Fig 2-4.) of results to identify priorities and build and track the impact of corrective measures.

The visual summaries include three summary level pie charts:

- Emissions by Scopes for Scope 1, 2 and 3, including supply chain (Fig 3)
- Emissions by Source for Scope 1 and 2 emissions (Fig 4)
- Emissions by Source for Scope 1,2 and 3 emissions, excluding supply chain (Fig 5)

Total emissions reported:

Technical note: This tool is configured to allocate your emissions to Scopes on the basis of Operational Control, i.e. All emissions arising from owned, leased or rented assets are accounted to your Scope 1 or 2 footprints as appropriate. It is also possible to account by Financial Control where only emissions arising from the assets that you directly own are allocated to your Scope 1 or 2 footprints. Under Financial Control accounting all emission from rented or leased assets would be reported as Scope 3 emissions. To account under Financial Control, you will need to manually assign Scope 3 where appropriate on the data sheets.

Scope	Emission area	Value	Unit
Scope 1	SC1 Building energy	16.60	CO ₂ -e (metric tonnes)
	SC1 Travel	11.38	CO ₂ -e (metric tonnes)
	SC1 Refrigerants	30.47	CO ₂ -e (metric tonnes)
	SC1 Waste	-	CO ₂ -e (metric tonnes)
	SC1 Anaesthetic gases	12.58	CO ₂ -e (metric tonnes)
Scope 2	SC2 Purchased and consumed grid electricity	54.04	CO ₂ -e (metric tonnes)
	SC2 Heat networks	-	CO ₂ -e (metric tonnes)
Total Scope 1 & Scope 2		125.07	CO ₂ -e (metric tonnes)
Scope 3	SC3 Building energy (building not owned)	-	CO ₂ -e (metric tonnes)
	SC3 Refrigerants (building not owned)	-	CO ₂ -e (metric tonnes)
	SC3 Travel (vehicles not owned)	-	CO ₂ -e (metric tonnes)
	SC3 Employee business travel-road, rail, air	4.73	CO ₂ -e (metric tonnes)
	SC3 Water	-	CO ₂ -e (metric tonnes)
	SC3 Waste	19.29	CO ₂ -e (metric tonnes)
	SC3 Contractor logistics	0.65	CO ₂ -e (metric tonnes)
	SC3 Inhalers	11.14	CO ₂ -e (metric tonnes)
Total Scope 3		3,149.61	CO ₂ -e (metric tonnes)
Total All Scopes		3,185.42	CO ₂ -e (metric tonnes)
Other	Generated renewable electricity	-	KWh
Total Scope 1		71.03	
Total Scope 2		54.04	
Total Scope 3		3,185.42	

17,439.00	km
9,181,919.00	litres
61,842.00	kg
7,503.39	km

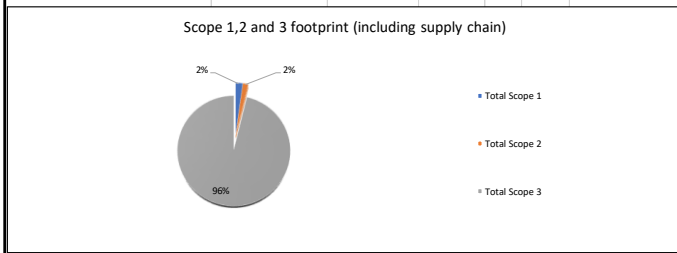
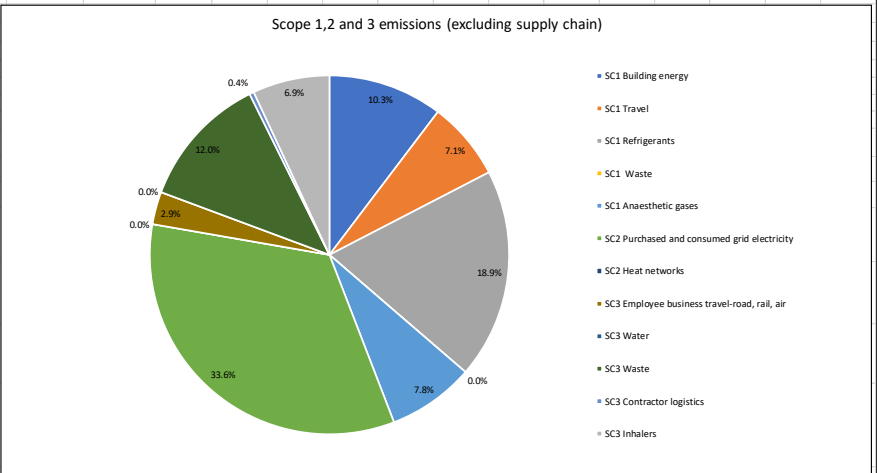
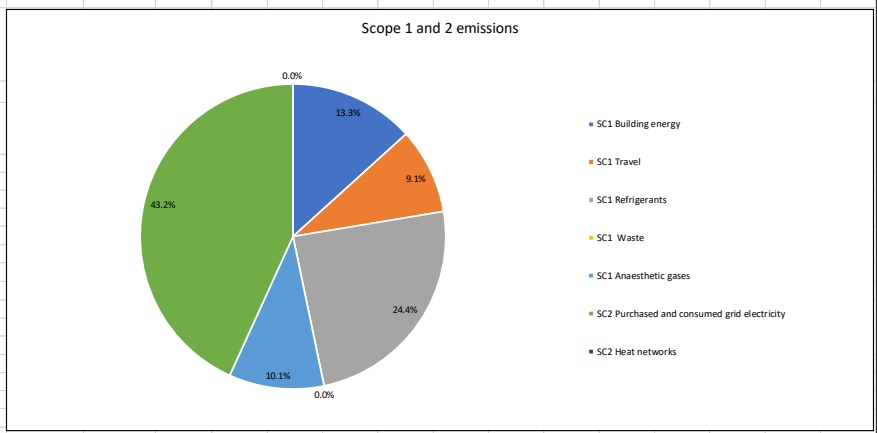


Figure 2 An image from the 'Total sheet' which consolidates all totals and provides an overall summary of emissions.

Scope 1,2 and 3 footprint (including supply chain)

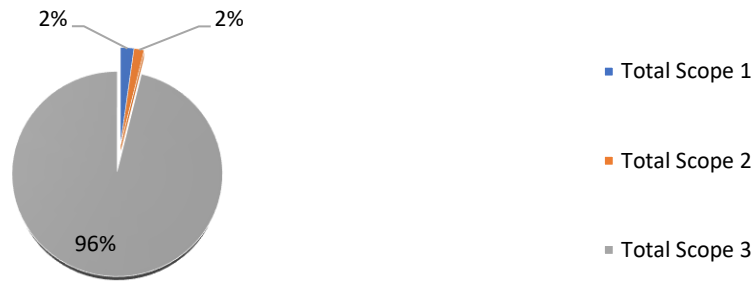


Figure 3 Emissions by Scopes 1, 2 and 3. Including Supply Chain

Scope 1 and 2 emissions

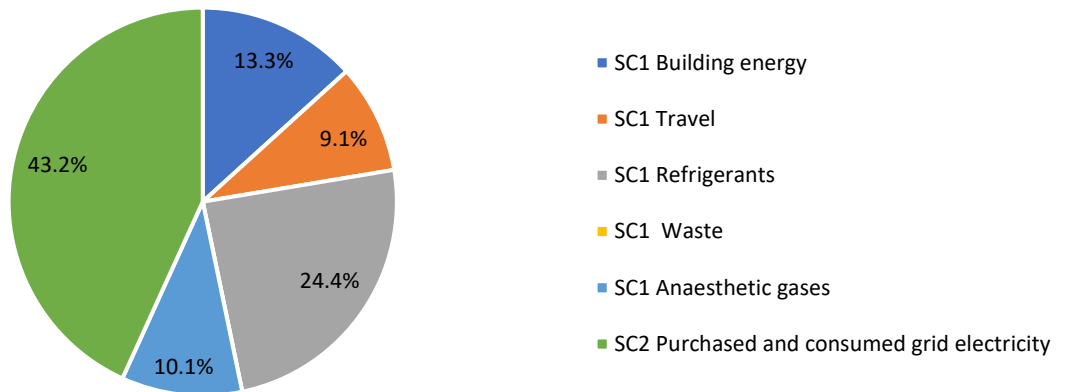


Figure 4 Emissions by Source for Scope 1 and 2. Excluding Supply Chain

Scope 1,2 and 3 emissions (excluding supply chain)

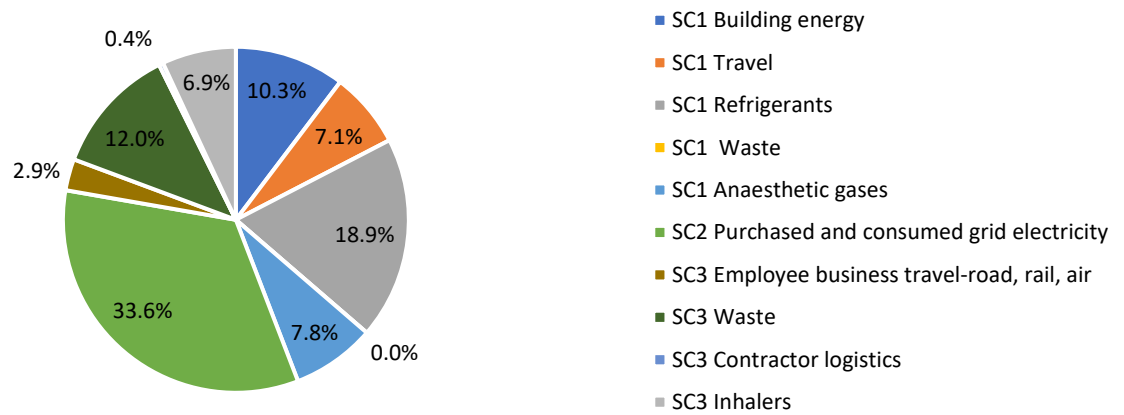


Figure 5 Emissions by Source for Scope 1,2 and 3. Excluding Supply Chain

The different levels allow for users to make progress using rough (Tier 1) to more detailed (Tier 3) information and encourages procurement from suppliers that share their carbon data publicly and have Net Zero commitments. Besides showing individual 'hot spot' categories of expenditure, the data summarise the percent of finances that are spent with suppliers that indicate their carbon data and have Net Zero commitments (see figures 10-11).

1		To generate Scope 3 supply chain emissions estimates the 'Quickstart', 'Procurement' and 'Spend Mapping' sheets need to be completed as fully as possible								
2		As well as bottom-up carbon footprinting from natural resource use, this tool calculates carbon emissions from spending data. Outputs are possible in 3 Tiers of increasing detail and accuracy based on the depth of data provided. T1 Scoping- Roughly estimates you supply chain emissions from national averages. T2 Hotspotting- Provides a more refined supply chain emissions estimate and identifies carbon hotspots. T3 Reporting- Provides a more accurate supply chain emissions calculation to aid reporting.	Total \$ spent on healthcare in time period (pay and non-pay)							
3			10,000							
4	Low data quality	Tier 1-Scoping. Footprinting at this Tier represents an estimate of total supply chain emissions based on national, geographic, or national income group averages. Averages for health sector carbon intensity across these groupings have been calculated from published literature. Where nation specific health sector carbon intensities are not available, these averages may be drawn from very small data sets and may not be representative of the supply chain for a specific organization. They do however provide a fair estimate of total the scale of emissions arising from healthcare activity across all scopes. To generate a T1 footprint please complete the 'Quickstart_T1' sheet. Any non-supply chain emissions that you have calculated in the rest of the workbook will be excluded from this total.	Geographic or economic classification group	Emissions estimate (Tonnes CO2e)	Number of country data points for used average					
5			Low-Mid Income_ average	18.033	9					
6		Tier 2-Hotspotting. Footprinting at this Tier represents an estimation of Scope 3 supply chain emissions only. This uses UK government published product carbon intensities. This offers some guidance as to where hotspots exist in your supply chain. However, UK carbon intensities may not accurately reflect the true carbon intensity of spending in your country. Any areas where good bottom-up footprinting has been conducted in the rest of the workbook (e.g., energy, fuel, or business travel) should have been excluded from this total. If Tier 3 footprinting is not undertaken, the Tier 2 emissions figure can be presented alongside Scope 1, 2 and other Scope 3 data as an initial estimate of the emissions from your supply chain. To generate a T2 footprint please complete the 'Spend Mapping' and 'Procurement_T2' sheets.	Number of cost codes reviewed	Emissions estimate (Tonnes CO2e)	No of high priority hotspot areas identified	% of emissions in high priority areas	Number of medium priority hotspot areas identified	% of emissions in medium priority areas		
7			4	2,404	3	95%	2	5%		
8	High	Tier 3-Reporting. Footprinting at this Tier is more refined and accurate than Tier 2. Where possible emissions based on average factors have been replaced with actual data from your suppliers. This allows tracking of actual carbon reductions in your supply chain. Alongside more qualitative metrics, data at this level can evidence how your supply chain is moving towards Net Zero and better environmental stewardship. The Tier 3 emissions figure can be presented alongside Scope 1, 2 and other Scope 3 data as the calculated emissions from your supply chain. To refine your T2 footprint to T3 enter as much data on your largest suppliers as possible on the 'Procurement_T3' sheet.	% (\$) Supply chain with environmental policies	Emissions estimate (Tonnes CO2e)	% (\$) of Supply chain reporting Sc1, 2 emissions (%)	Number of suppliers reporting Sc1 and 2 emissions (No.)	% (\$) of Supply chain with Sc1 and 2 Net zero emissions targets (%)	% (\$) of Supply chain with Sc1, 2 and 3 Net zero emissions targets (%)		
9			11%	2,316	10.53%	2	11%	11%		

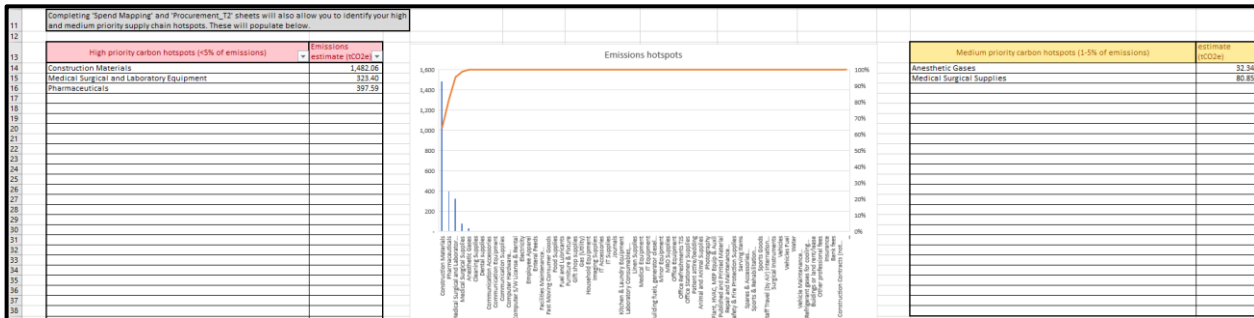


Figure 10 Example of Supply Chain Totals sheet which summarises carbon emissions and hotspots calculated from spending data

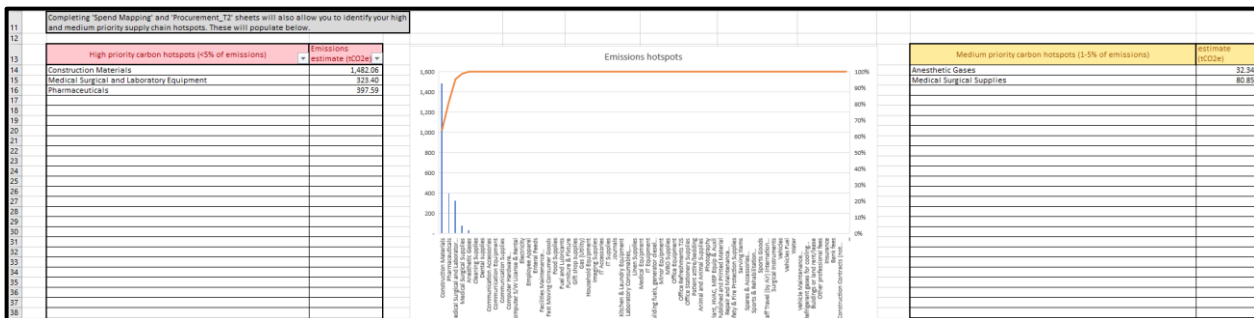


Figure 11 Hotspot areas are shown in addition to totals. High priority, high carbon spending categories are listed and named on the left table under the red banner, whilst the carbon emissions associated with these areas are provided under the yellow banner on the right table.