IBM® Power® Systems Hardware Management Console

Product Carbon Footprint

IBM is committed to environmental leadership in all its business activities, from operations to the design of its products and use of its technology. To help our clients better understand the environmental impacts associated with IBM products, we report the product carbon footprint (PCF) for representative products using the Product Attributes to Impact Algorithm (PAIA) model. Table 1 describes a typical IBM® Power® Systems Hardware Management Console (HMC) configuration considered for this PCF analysis.

Limitations of PAIA

PAIA results represent a streamlined Life Cycle Assessment (LCA). While the product carbon footprint provides a high-level estimate of the emissions associated with the product, it should not be used for emissions inventory, formal carbon foot printing exercises or comparing products. LCA results are strongly influenced by the assumptions made by the analyst.

If those assumptions are inconsistent, comparisons are not likely meaningful. Furthermore, PAIA may not be compliant with the primary data requirements of some LCA standards. The results from the PAIA tools are liable to change over time as the methodology is improved and data is updated. More information on these limitations, as well as general guidance for interpreting this report, is available in the publication [Assessment of lifecycle carbon footprints of products.](#)

	IBM Power Systems HMC
Model	7063-CR2
Processor	1x Power9
Configured memory	128 GB
Storage	2 x 1.8 TB SAS SFF 2.5-inch
I/O Features	4 x 1 Gb Ethernet ports 2 x 10 Gb Ethernet Ports 1 x 1 Gb BMC

Table 1: *Typical product configuration of the IBM® Power® Systems HMC considered for this PCF analysis.*

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This PCF estimate was produced using the Product Attributes to Impact Algorithm (PAIA) model, developed by the Massachusetts Institute of Technology's Materials Systems Laboratory and partners, Version 1.4.7, April 7, 2025, copyright by the ICT Benchmarking collaboration including the Massachusetts Institute of Technology's Materials Systems Laboratory and partners.

For the configuration shown in Table 1, Table 2 provides the total estimated mean greenhouse gas (GHG) emissions in carbon dioxide equivalent (kg CO_2e[1]) associated with the manufacturing, assembly, electricity consumption[2], transportation and end-of-life handling, over 5 years using hypothetical average GHG emissions factors. Figure 1 shows the estimated contribution of each life cycle phase to the total estimated mean GHG emissions.

The data used in the PAIA server tool for the representative configuration is provided in Table 3. This PCF was generated using a distribution of emissions factors across the location, based on International Energy Agency (IEA) emissions factors[4].

Impact by phases of the product's lifecycle

The PCF for server equipment is largely driven by the use phase which is highly variable based on the electricity generation source used to power the product, the expected use life of the product, and the power profile. This PCF was generated using a distribution of emissions factors across the respective location. Table 2 shows that 75% - 91% of the carbon footprint occurs in the use phase. IBM recommends that you customize the use phase GHG emissions based on your specific data center conditions, using the guidance provide in Assessment of life cycle carbon footprints of products.

Uncertainty in the product carbon footprint

All estimates of carbon footprint are uncertain. To provide transparency around this uncertainty, Table 2 also reports the Standard Deviation and the 95th percentile of the carbon footprint estimate. The 95th percentile means that 5% of the time the carbon footprint will exceed the value provided.

		Total estimated mean GHG emissions in kg CO_2e[1]	% of Estimated mean GHG emissions in the use phase	Standard deviation of the estimated GHG emissions in kg CO_2e[1]	95th percentile of the estimated GHG emissions in kg CO_2e[1]
Power Systems HMC	European Union	5,620	75%	4,900	29,000
	Asia Oceania	12,320	88%	6,500	34,000
	United States	7,620	91%	1,900	12,700

Table 2: *Summary of the estimated GHG emissions for the product configuration listed in Table 1 for the IBM® Power® Systems HMC.*
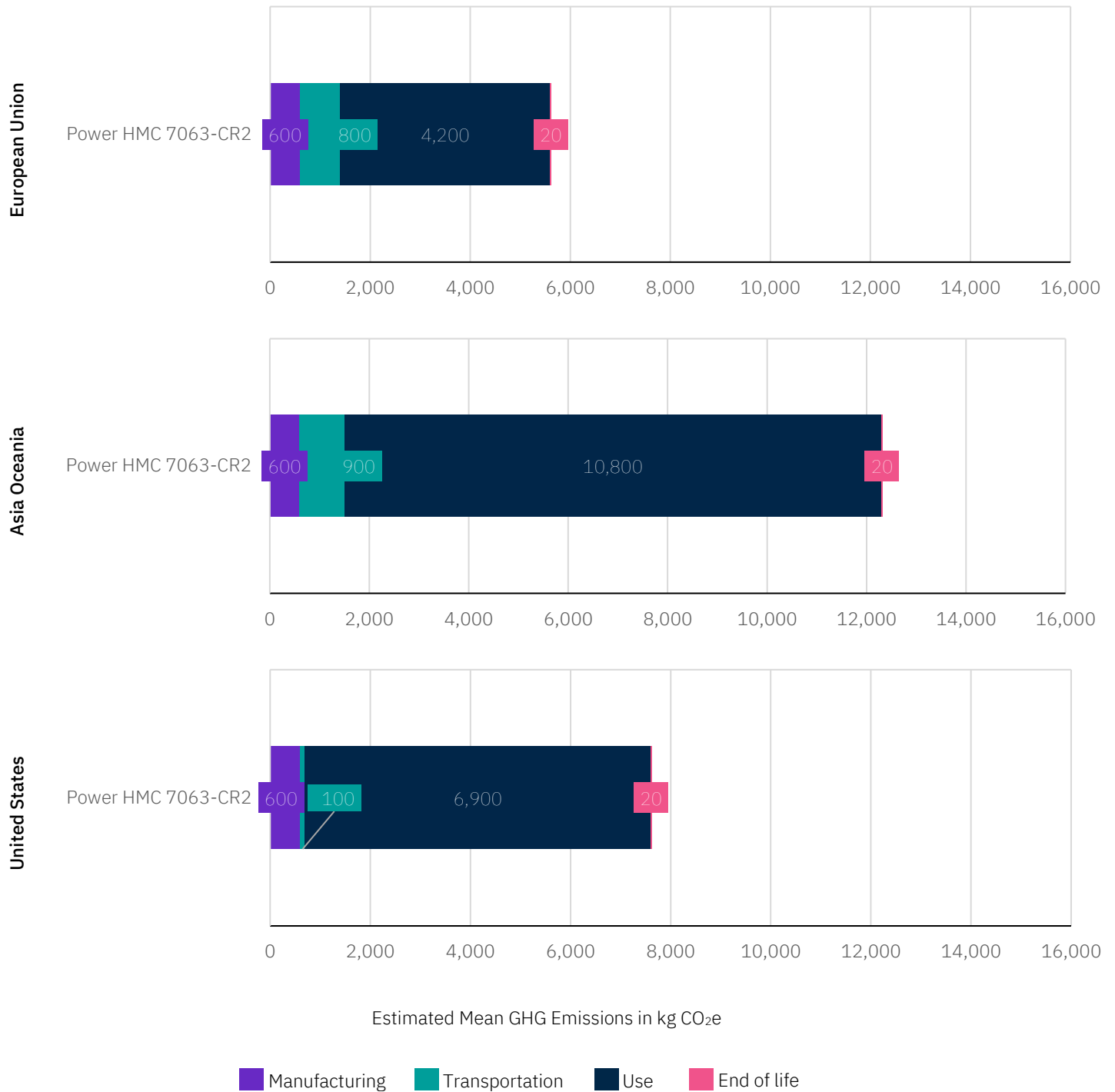
Figure 1: *Carbon footprint impact by phase for the IBM® Power® Systems HMC product configuration listed in Table 1 using the PAIA model assuming a 5-year product lifetime.*

PAIA input data	Power Systems HMC		
Server type	Rack		
Server quantity	1		
Number of PSU	2		
Number of fans	6		
Server weight	17.6 kg		
Rack mount weight[3]	N/A		
Packaging weight	12.1 kg		
PWB area	815.3 cm^2		
CPU quantity	1		
CPU package area	25 cm^2		
DRAM total capacity	128 GB		
Chipset & other ICs package area	22.6 cm^2		
Chipset & other ICs quantity	5		
HDD quantity	2		
Form Factor	2.5		
Sub card total PWB area	1417.6 cm^2		
Sub card main chip package area	Default		
Sub card chip count	Default		
PSU weight	0.90 kg		
PSU dimensions	19.1 cm x 8.0 cm		
Product lifetime	5 years		
Yearly energy consumption	3784 kWh		
Assembly location	Mexico		
Transportation		Mode: Air	Mode: Truck
	European Union	9,700 km	300 km
	Asia Oceania	11,738 km	300 km
	United States	0 km	3,200 km
Fraction recycled	0.97		

Table 3: *Data used in the PAIA server model for the IBM® Power® Systems HMC.*

Disclaimers

1. The results are reported using the units of kilograms of carbon dioxide equivalent (kg CO_2e). This represents the amount of global warming caused by a quantity of GHGs (CO_2, CH_4, N_2O, HFCs, PFCs and SF_6) at a specific point in time, expressed in terms of the amount of CO2 which would have the same instantaneous warming effect. Recognizing the uncertainty in carbon footprint estimates, the results have been rounded.

2. The electricity consumption is incurred by clients using an IBM product. The estimate used is not specific to any client deployment of the IBM product or client workload.

3. The estimated carbon footprint was computed excluding the rack.

4. The mean electricity emissions factor used in the PAIA analysis for each location is calculated based on the energy consumption and use phase emissions. These values are 0.22 kg CO_2e/kWh for Europe Union, 0.57 kg CO_2e/kWh for Asia Oceania, and 0.37 kg CO_2e/kWh for the United States. The region definition for Europe follows the World Bank definition.