IBM® Power® S1122

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® S1122 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.

	Power S1122
Model / MTM	S1122 / 9824-22A
Processor	2x Power 11 (16-core)
Configured memory	1024 GB
Storage	2x 800GB 4K NVME
I/O Features	1x Generic PCI

Table 1: *Typical product configuration of the IBM® Power® S1122 considered for this PCF analysis.*

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, July 29, 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 4 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[3].

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 81% - 92% 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. IBM focuses on improving our product energy efficiency and on providing tools for our clients to estimate and measure the energy consumption of their product. The IBM Systems Environment Estimator can be used to estimate the power consumption of your specific product configuration.

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 S1122	European Union	12,640	81%	11,200	63,800
	Asia Oceania	28,240	91%	14,900	77,100
	United States	17,940	92%	3,900	27,400

Table 2: *Summary of the estimated GHG emissions for the typical product configuration listed in Table 1 for the IBM® Power® S1122.*

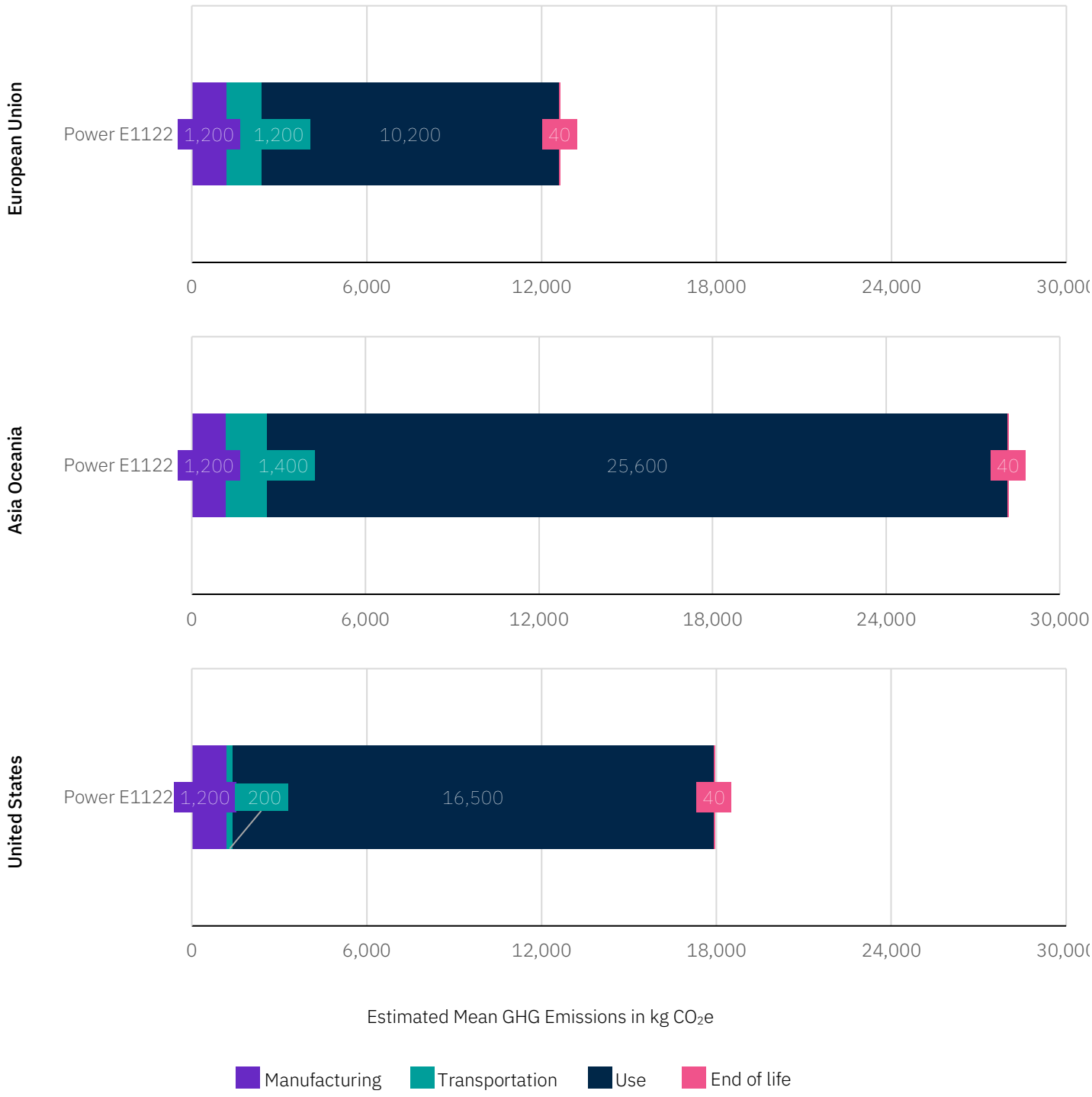

Figure 1: *Carbon footprint impact by phase for the IBM® Power® S1122 product configurations listed in Table 1 using the PAIA model assuming a 4-year product lifetime.*

PAIA input data		Power S1122	
Server type		Rack	
Server quantity		1	
Number of PSU		2	
Number of fans		5	
Server weight		31.8 kg	
Rack mount weight[4]		0.0 kg	
Packaging weight		15.0 kg	
PWB area		2138.6 cm^2	
CPU quantity		2	
CPU package area		65.3 cm^2	
DRAM total capacity		1024 GB	
Chipset & other ICs package area		Default	
Chipset & other ICs quantity		Default	
SSD quantity		1	
SSD PWB area		Default	
SSD IC area total		Default	
SSD IC quantity		Default	
Sub card total PWB area		858.6 cm^2	
Sub card main chip package area		53.8 cm^2	
Sub card chip count		190	
PSU weight		1.35 kg	
PSU dimensions		19.5 cm x 10.0 cm	
Product lifetime		4 years	
Yearly energy consumption[5]		11,226 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® S1122.*

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 0.23 kg CO_2e/kWh for Europe, 0.57 kg CO_2e/kWh for Asia Oceania, and 0.37 kg CO_2e/kWh for the United States.

5. Power consumption data is obtained using the IBM Systems Environment Estimator, a web-based tool for estimating power requirements for the IBM® Power S1122. This tool estimates the power requirements for the specific configuration listed in Table 1 under normal operating conditions. The power consumption assumes the product operated at 30% utilization. The energy consumption assumes that the product operates 24 hours a day, 365 days a year for its product lifetime.

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