BIBO Water Carbon Footprint Control Project

'Realise' Project Summary Report

DRAFT

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1 Project Scope

1.1 Activity Boundaries

Activities that were mapped as part of the GHG Inventory project, based on their potential impact on overall GHG Emissions of the company – including all known Scope 1 and Scope 2 emission sources, are shown below.

Table 1 - Activity Boundary Summary

No.	Activity Group	Activity Type	Scope Type
1	Fuel	Cooking Fuel	Scope 1
2	Fuel	Stationary Combustion	Scope 1
3	Logistics	Logistics - Road	Scope 1
4	Electricity	Electricity	Scope 2
5	Water	Water	Scope 2
6	F&B	Bottled Water / Drinks	Scope 3
7	Waste	Waste Generation	Scope 3
8	Materials	Paper	Scope 3
9	Materials	Plastic	Scope 3
10	Materials	Cleaning Supplies	Scope 3
11	Materials	Chemicals	Scope 3

1.2 Life-cycle Boundaries

GHG Emission Factors used for estimating emissions from various activities ranged from emission factors that accounted for the direct emissions from the activity to activties for which Life-Cycle GHG Emission Factors were used, as indicated in the table below.

Table 2 - Emission Factor LCA Status

No.	Activity Type	Emission Factor Status
1	Cooking Fuel	Direct Emissions
2	Stationary Combustion	Direct Emissions
3	Logistics - Road	Direct Emissions
4	Electricity	Direct Emissions, Transmission
5	Water	Electricity
6	Waste Generation	Partial LCA
7	Bottled Water/Drinks	Partial LCA
8	Paper	LCA
9	Plastic	LCA
10	Cleaning Supplies	LCA
11	Chemicals	LCA

1.3 Stakeholder Boundaries

The client's physical and operational boundaries were mapped to develop a list of relevant stakeholders (internal process groups) who's activities (i.e. direct emissions from within the boundary and well as consumption of goods and services produced elsewhere) were included as part of the GHG Inventory. The consequent stakeholder boundary is summarized in the table below.

Table 3 - Stakeholder Boundary Summary

	Stakeholder
Administration	
1.01	Administration
Production - Sangareddy	
1.021	Office
1.022	Laboratory
1.023	Plant - Retail - 1L
1.024	Plant - Retail - 500 ml
1.025	Plant - Retail - 300 ml
1.026	Plant - Retail - 2L
1.027	Plant - Bulk- 10L
1.028	Plant - Bulk- 20L
Production - Marvel	
1.031	Laboratory
1.032	Plant - Retail - 1L
1.033	Plant - Retail - 500 ml
1.034	Plant - Retail - 300 ml
1.035	Plant - Retail - 2L
1.036	Plant - Bulk- 20L
Production - Vandana	
1.041	Office
1.042	Laboratory
1.043	Plant - Bulk - 20L
Logisitcs - Sangareddy	
1.051	Retail
1.052	Bulk
Logisitcs - Marvel	
1.061	Retail
1.062	Bulk
Logisitcs - Vandana	
1.071	Bulk

2 Results

2.1 Resource Consumption Inventory

The activity data collection process resulted in the following summary of the resource consumption activities for the period indicated in the table below and extrapolated linearly for a entire 12 month annual period.

Table 4 – BIBO Water Annual Resource Consumption Inventory (Period: December 2008, February 2009, May 2009 - Extrapolated)

	Activity Group/Activity Type	***Qty.***	***Meas. Unit***
	Total Production	102,617,536	liters
1	***Scope 1 (Direct Emissions)***		
1.1	Fuel - Cooking Fuel	992	kgs
1.2	Fuel - Generator & Motor Fuel	0	kgs
1.3	Fuel - Other Fuel	0	kgs
2	***Scope 2 (Indirect Emissions - Electricity & Water)***		
2.1	Electricity	772,660	kWh
2.2	Water	380,000	liters
3	***Scope 3 (Indirect Emissions - Other)***		
3.1	***Travel & Logistics***		
3.1.5	Logistics	168164	liters-fuel
3.2	***Food, Beverage, Waste***		
3.2.1	Bottled Water / Drinks	129,484	kgs
3.3.2	Solid Waste	1,054	kgs
3.4	***Paper, Plastic, Consumables***		
3.4.1	Paper & Cardboard	106,463	kgs
3.4.2	Plastic	177,848	kgs
3.4.3	Plant Consum. & Cleaning Supplies	4,731	kgs

2.2 GHG Inventory and Analysis

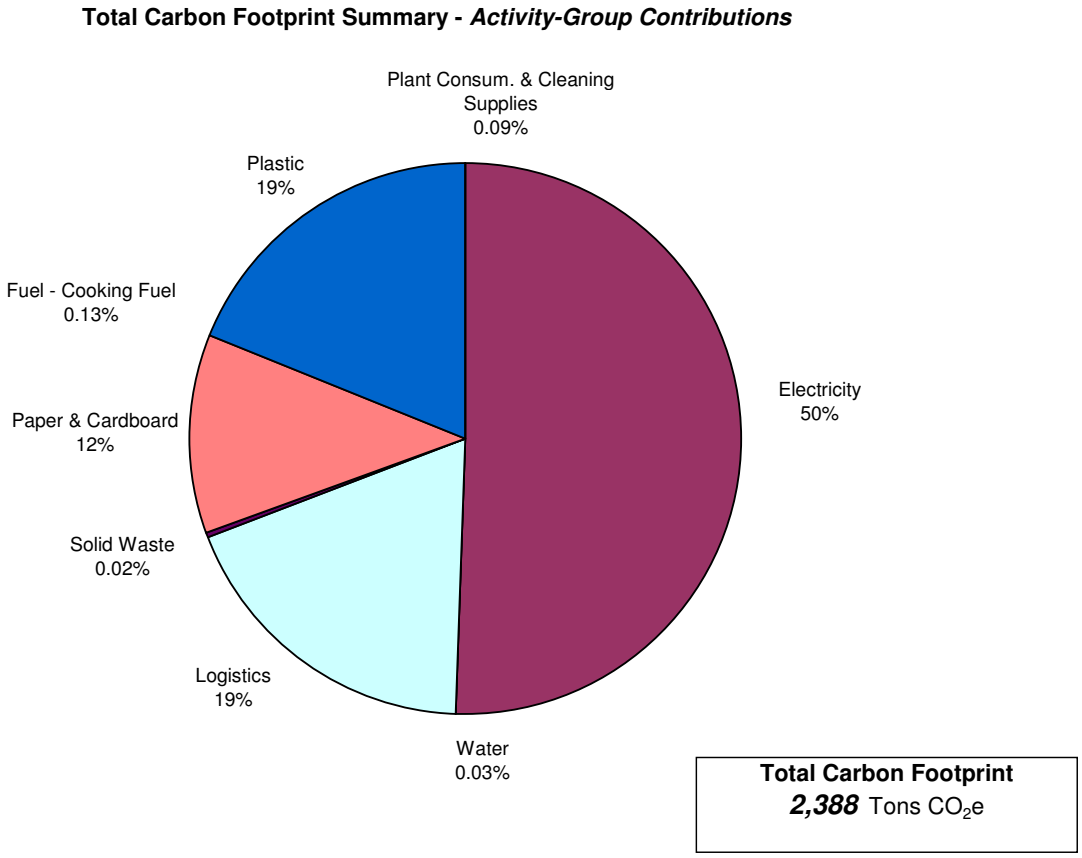
GHG Inventorying, based on the appropriate GHG Emission Factors, using a customized Carbon ERP model developed specifically for the project, resulted in the following GHG Inventory for a entire 12 month annual period.

Table 5 – BIBO Water Annual Carbon Footprint Summary
(Period: December 2008, February 2009, May 2009 - Extrapolated)

	Activity Group/Activity Type	*Total Carbon Footprint (tons CO2e)*	*% Contribution*
	Total Production		
1	***Scope 1 (Direct Emissions)***		
1.1	Fuel - Cooking Fuel	3.1	0.13%
1.2	Fuel - Generator & Motor Fuel	0.0	0.00%
1.3	Fuel - Other Fuel	0.0	0.00%
	Sub-Total	***3.1***	***0.13%***
2	***Scope 2 (Indirect Emissions - Electricity & Water)***		
2.1	Electricity	1,204.1	50%
2.2	Water	0.8	0%
	Sub-Total	***1204.9***	***50%***
3	***Scope 3 (Indirect Emissions - Other)***		
3.1	***Travel & Logistics***		
3.1.5	Logistics	446.7	19%
	Sub-Total	***446.7***	***19%***
3.2	***Food, Beverage, Waste***		
3.2.1	Bottled Water / Drinks	0.0	0.00%
3.3.2	Solid Waste	0.5	0.02%
	Sub-Total	***0.5***	***0.02%***
3.4	***Paper, Plastic, Consumables***		
3.4.1	Paper & Cardboard	280.8	12%
3.4.2	Plastic	450.0	19%
3.4.3	Plant Consum. & Cleaning Supplies	2.1	0%
	Sub-Total	***732.8***	***31%***
Total		**2,388**	
		(tons CO2e)	
Per Unit Served		**0.023**	
		(kg CO2e)	

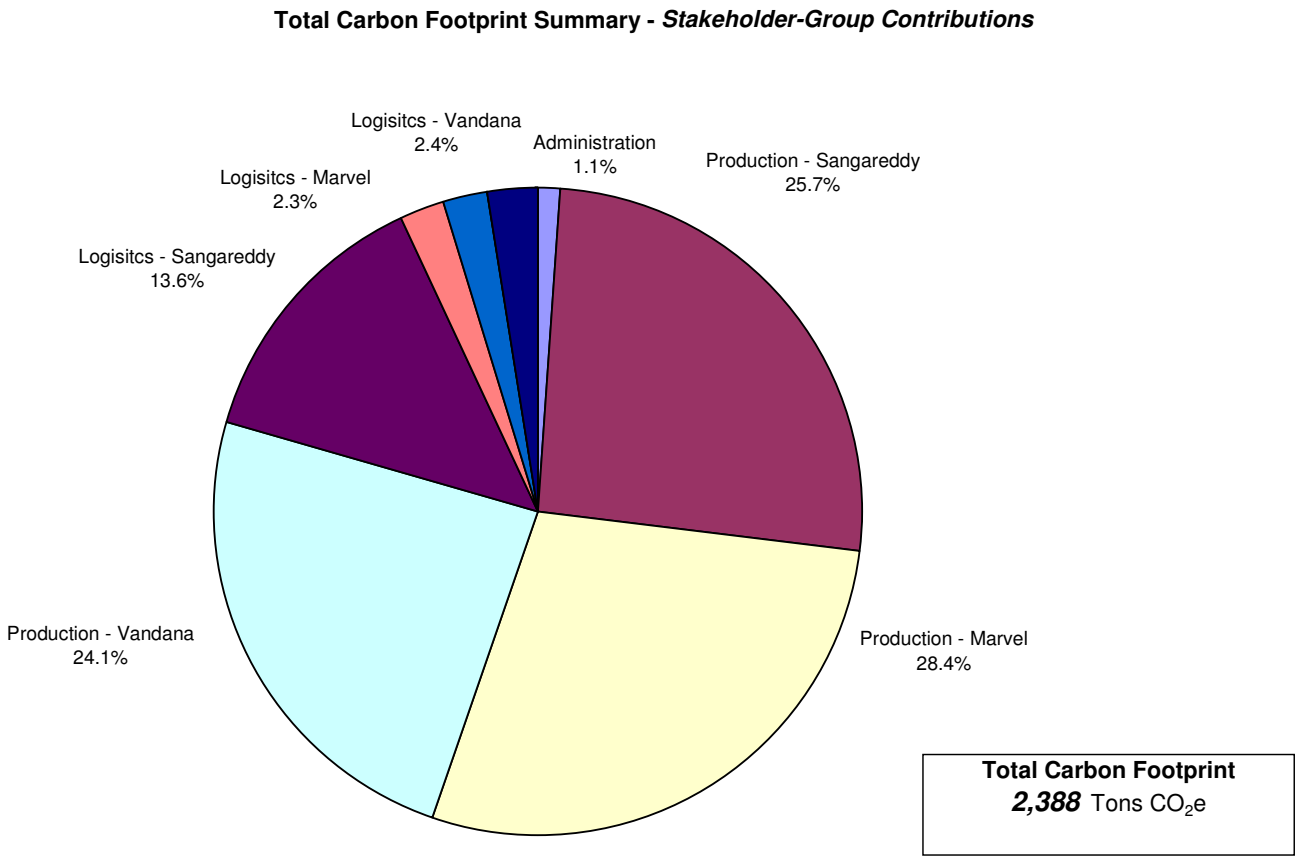
The figure below indicates the primary activities contributing to the annual GHG Inventory. The activities that had the greatest impact was Electrical Energy consumption for plant production and administrative activities (offices, laboratories), followed by emissions from distribution logistics and Scope 3 emissions from plastic use for product packaging.

Figure 1 – BIBO Water Activity Contributions to Total Carbon Footprint – FY 2008-2009



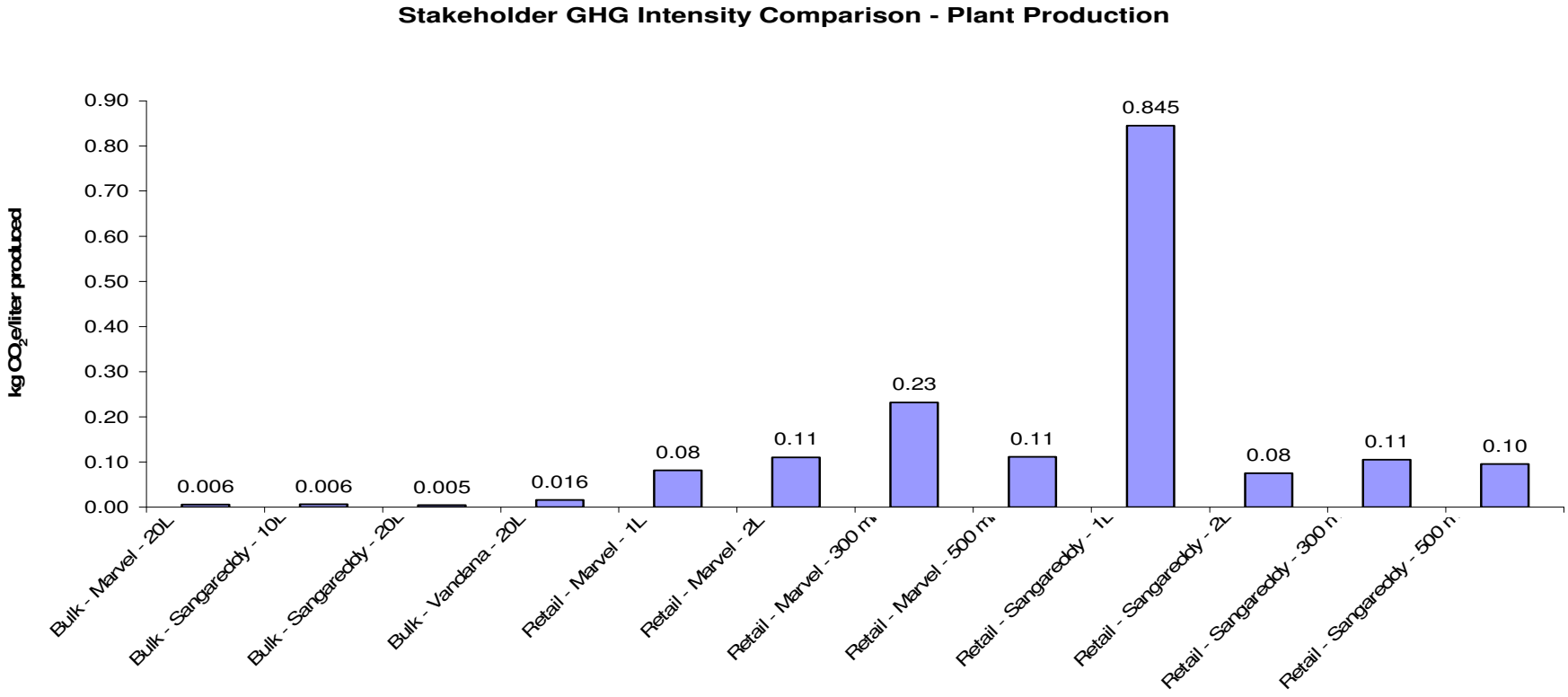
The figure below indicates the primary stakeholders (i.e. internal process groups in this project) contributing to the annual GHG Inventory. The internal processes that had the greatest impact in terms of absolute magnitude (proportional to quantity of water production) were the production facility at Marvel, followed by Sangareddy and Vandana Units.

Figure 2 – BIBO Water Stakeholder Contributions to Total Carbon Footprint – FY 2008-2009



In terms of GHG intensity of production across the various facilities and product lines, it was clear that Retail Production (below 2 liter capacity bottles) resulted in a significantly higher GHG intensity relative to the bulk production facilities/processes. Amongst the retail units, Marvel 1 liter production line resulted in the lowest GHG intensity per liter (0.08 kg CO2e/liter) while the highest was the retail production of 300 ml bottles at Marvel. In terms of bulk production, the most efficient production unit was the 20 L production system at Sangareddy (0.005 kgCO2e/liter). The primary reason for the lower GHG intensity of retail vs. bulk units was the re-use of packaging in the case of bulk jars versus single-use PET bottles for retail packaging.

Figure 3 – BIBO Water Stakeholder GHG Intensity Comparison – Plant Production – FY 2008-2009



A corresponding trend, mirroring the trend of GHG intensity of Retail Production (below 2 liter capacity bottles) relative to the bulk production facilities/processes, was observed in the context of GHG intensity of logistics operations; logistics for retail units exhibited significantly greater GHG intensity relative to bulk units. The primary reason for the lower GHG intensity of logistics for retail vs. bulk logistics is the smaller network coverage (within the urban center) of the bulk operations relative to the state-wide logistics operations involved in the case of retail units. Furthermore, fuel efficiency of vehicle types used for the retail versus bulk lines had a significant impact on the consequent GHG intensity of logistics operations.

Figure 4 – BIBO Water Stakeholder GHG Intensity Comparison – Logistics – FY 2008-2009

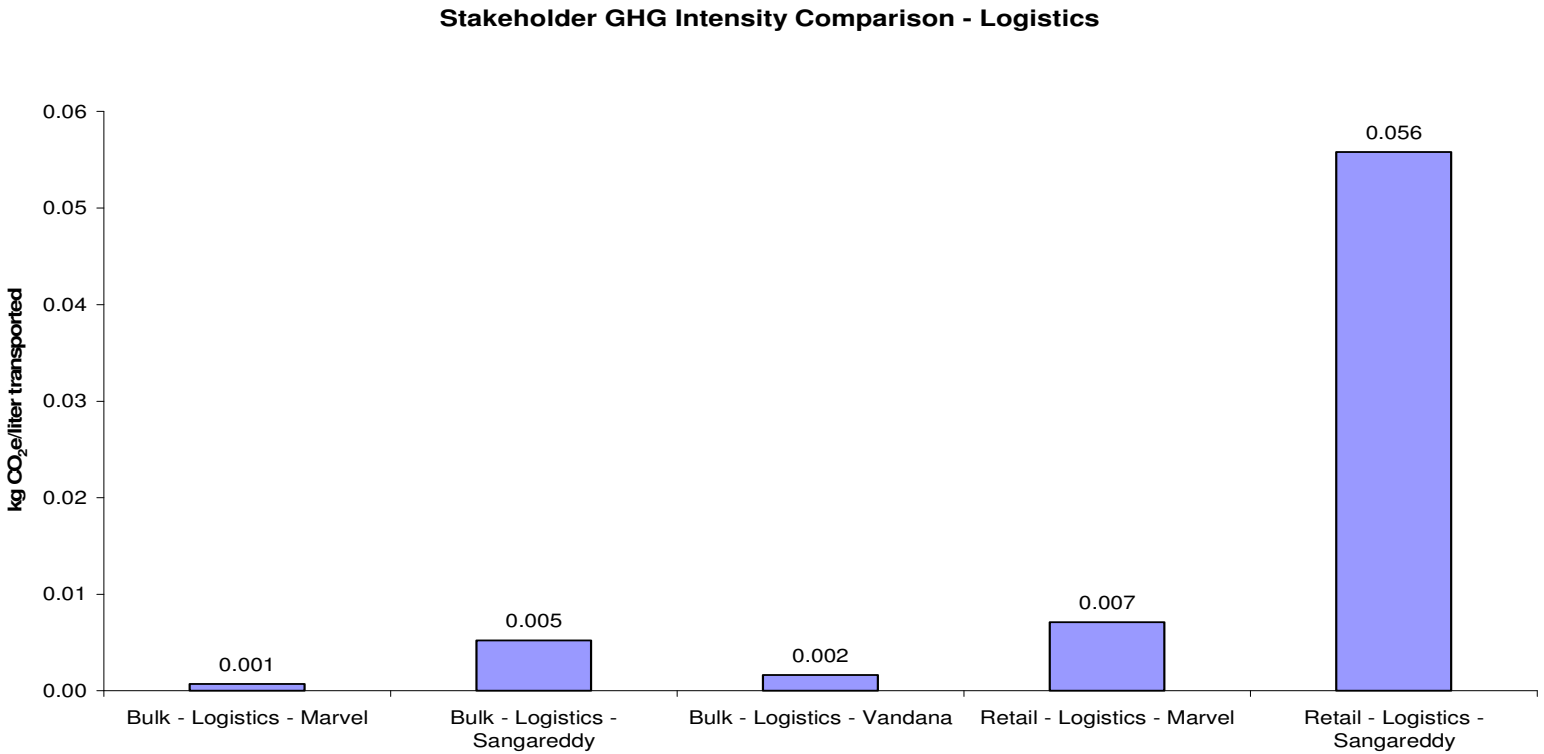


Figure 5 – BIBO Water Production-Line Carbon Footprint Comparison – FY 2008-2009

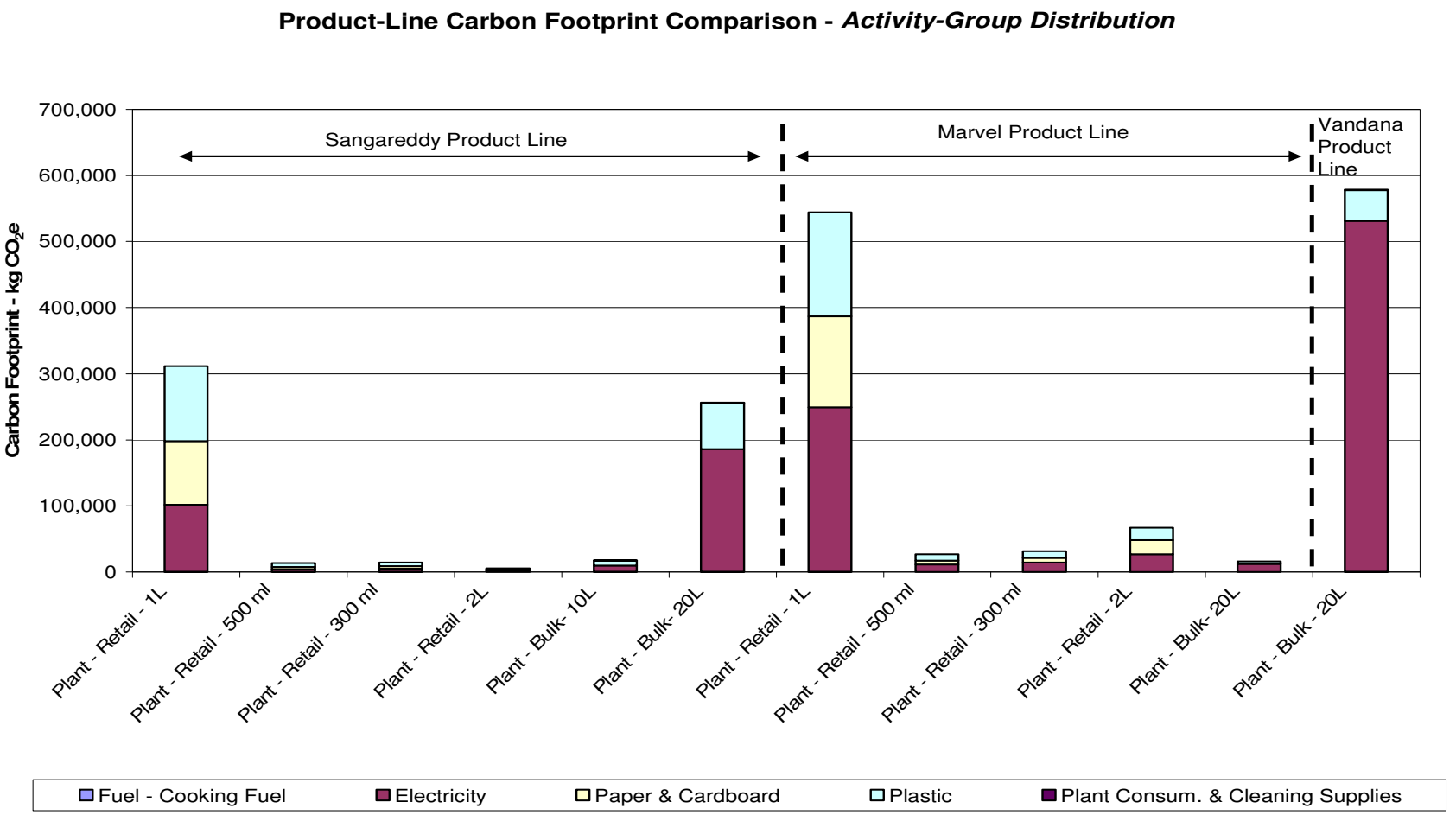


Figure 6 – BIBO Water Logistics-Line Carbon Footprint Comparison – FY 2008-2009