

WidgetCo - Carbon Footprint Case Study

Prepared by Edgar E. Blanco & Elsa Olivetti - MIT

To:

Cc:

Subject:

From:

I was asked again by one of our major customers about our carbon footprint. We can't postpone this anymore. Please have it ready for our next board meeting. Be prepared to explain if it ends up being larger than FerretCo's public disclosure. I am confident we are much more efficient than them.

Your CEO

-- Sent from my iPad

WidgetCo has been trying to dodge questions about their carbon footprint for a long time. It all started with some investors asking tough questions at the 2008 annual meeting about emissions from the Chinese operations. Starting in 2010, WidgetCo has been regularly approached by several government authorities (mostly from California and Europe) as well as an increasing number of customers asking similar questions. To date, WidgetCo has been able to point to their long tradition of social responsibility as well as leverage a lack of US regulation on the matter.

Since FerretCo, the main competitor to WidgetCo, reported their footprint in the 2012 Carbon Disclosure Project (CDP) survey, your CEO has been paying much more attention to those requests. You can still remember FerretCo's figure: 55,000 tons of carbon, equivalent to 1.1 kgs of carbon per kilogram of product sold. FerretCo has traditionally been a low cost competitor, utilizing 100% contract manufacturing in Asia and selling primarily to business customers through local sales offices. FerretCo is making a push to raise its profile and enter the consumer market, and has announced it will become carbon neutral and start labeling its retail office chairs with the product's carbon footprint in 2015.

WidgetCo's Operations

Widget Co manufactures a variety of office chairs used both by business as well as retail consumers. There are two manufacturing plants: one in Shanghai (China) and one in Michigan (US). Most of the raw material suppliers are also located in the Shanghai area. Widget Co wholly owns the US plant but the Shanghai plant is a joint venture (50-50) with local investors. Both plants manufacture products almost exclusively for WidgetCo.

Finished chairs and raw materials from China are shipped via ocean to the port of Los Angeles. Materials are then shipped via rail or truck to the plant in Michigan using a dedicated 3PL (third party logistics) provider. Finished chairs, either imported from China or manufactured in the US, are shipped to one of the two main distribution centers (DC) in California and Georgia. 60% of the industrial customers pickup products at WidgetCo's DC and the remaining customers are served using

commercial truck companies arranged by WidgetCo. To reach individual consumers, WidgetCo uses traditional retail channels. 80% of the shipments to retailers are done using WidgetCo's private fleet, 10% using less-than-truckload commercial carriers and the remaining 10% via air. All of WidgetCo's merchandise is held in consignment¹ at retail locations. WidgetCo has a very strong presence at one of the biggest retailers in their sector: BigDepot. As part of their long-term agreement, BigDepot allocates approximately 250 sq. ft. on each of their 2,500 retail locations exclusively for WidgetCo products. WidgetCo and BigDepot merchandisers jointly design and staff these dedicated spaces. Thanks to this relationship BigDepot retail sales now represent close to 40% of all retail sales.

The attached spreadsheet includes relevant operational data on WidgetCo's supply chain.

Case Study Questions

1. Using the attached spreadsheet, calculate WidgetCo's carbon footprint. You need to input the correct activity data, unit of measure, and emission factor for each WidgetCo supply chain activity. You must then decide what share of the activity should be included as part of WidgetCo's carbon footprint (using 0% for activities you decide are outside of WidgetCo's boundary) and indicate whether the emissions are Scope 1, Scope 2, or Scope 3².
2. How does WidgetCo's footprint compares to FerretCo's CDP disclosure? Be prepared to explain the differences to the CEO and the board. What did you include in your calculation and why?
3. Will you recommend publicly disclosing WidgetCo's carbon footprint? Why or why not? What about labeling your products with their carbon footprint or pledging to become carbon neutral?

¹ Consignment is an agreement with the retailer where the chairs are physically at the customer site but are still owned by Widget Co. Widget Co only receives payment once a customer pays the retailer for the chair.

² See pages 27-29 of the GHG Protocol Corporate Accounting and Reporting Standard for a description of emission scopes.

<http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf>

Appendix – Carbon Footprint Calculations Reference

Transportation Method 1 (Ton-Miles)

Used for shared transportation assets:

$$\text{Number of Shipments} * \text{Distance} * \text{Weight} * \text{Mode Emission Factor}$$

Example: Carbon Footprint of Widget Co Ocean Shipments

$$600 \text{ Shipments} * 4,507 \text{ miles} * 108.333 \text{ Tons/Shipment} = 292,954,099 \text{ ton-miles}$$

Thus, the total annual carbon footprint for ocean transportation will be:

$$292,954,099 \text{ ton-miles} * 0.016 \text{ CO}_2 \text{ Kg / ton-mile} = 4,687,265.60 \text{ Kg of CO}_2 \text{ or equivalently } 4,687 \text{ Tons of CO}_2$$

Transportation Method 2 (Gallons)

Used for dedicated transportation assets if fuel consumption is available:

$$\text{Fuel Gallons Consumed} * \text{Fuel Emission Factor}$$

Example: DC to Retail Shipments on Private Fleet

$$\text{Diesel Consumed} = (12,000,000 \text{ miles} / 6 \text{ mpg}) = 2,000,000 \text{ gallons}$$

Thus, the total annual carbon footprint for private fleet will be:

$$2,000,000 \text{ gallons} * 10.2 \text{ Kg of CO}_2 \text{ per gallon} = 20,400,000 \text{ Kg of CO}_2 \text{ or equivalently } 20,400 \text{ Tons of CO}_2$$

Facilities

$$\text{Energy Consumption} * \text{Electricity Factor} + \text{Direct CO}_2 \text{ Emissions}$$

Example: Shanghai Plant Carbon Emissions

$$350,000,000 \text{ kWh} * 0.79 \text{ Kg of CO}_2 \text{ per kWh} + 58,000,000 \text{ Kg of CO}_2 = 334,500,000 \text{ Kg of CO}_2 \text{ or equivalently } 334,500 \text{ Tons of CO}_2$$

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