A CORPORATE WATER FOOTPRINT

DECKERS OUTDOOR CORPORATION

PROJECT MEMBERS:

Jessica Heyman
Ryan Kintz
Byron Thayer
Kristin Van Abel
Kimberlyn Way

PROJECT ADVISOR:

Thomas Dunne

BREN SCHOOL OF ENVIRONMENTAL SCIENCE & MANAGEMENT
UNIVERSITY OF CALIFORNIA, SANTA BARBARA

deckers OUTDOOR CORPORATION

UGG australia
Teva
sanuk
MOZO
ahnu
TSUBO
(Deckers)

Project Objectives

Deckers Outdoor Corporation (Deckers), the parent company to several prominent footwear brands including UGG and Teva, requested that our team (DeckersWater) calculate the corporation's 2010 water consumption, the associated environmental impacts of that water consumption, and how they might reduce their water footprint. Because corporate water footprinting is a relatively new practice, accepted approaches, system boundaries, and definitions are still being developed. Thus, DeckersWater designed an approach that is accurate and easy to use for corporations seeking to establish a baseline water footprint and identify key areas for improvement. This methodology was used to assess Deckers' 2010 water consumption.

Project Background

Water footprinting is a relatively new concept, first appearing in the academic literature in 2002. The concept has mainly been used to examine water consumption of individual products, such as a t-shirt, a single beverage, or entire countries. Recently, a number of corporations have performed more exhaustive company-wide water footprints, but system boundaries, levels of disclosure, term definitions, and methodologies have varied widely. Our methods and system boundaries are clearly delineated, and justifications are decidedly transparent in order to enable replication or modification of our methods by other corporations.

Water Footprint Methodology

Water Footprint Definition

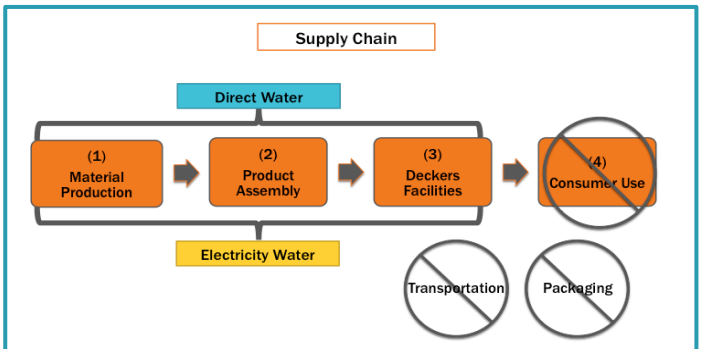
A water footprint includes an inventory or accounting of evaporative water consumption, an assessment of the environmental impacts associated with that water consumption, and recommendations. Our approach focuses specifically on evaporative blue water consumption, or water consumed through evaporation from freshwater sources such as rivers, lakes and reservoirs.

Project Significance

DeckersWater aims to make a contribution to the water footprinting community through our novel system boundary approach. We differ from most of the water footprinting community in that we include water consumed in the direct generation of electricity, and exclude measures of gray and green water. Reasons for excluding gray and green water are listed under system boundaries.

Electricity generation can be very water intensive; thus, we believe that an accurate water footprint must attribute the water consumption to the corporation for which that electricity is generated. Water consumption from electricity generation is determined by the fuel mix of the electricity generation source (e.g. nuclear, oil, hydro, coal) and its correlated consumptive conversion factor.

Water consumption from electricity generation is determined by country specific fuel mixes (Energy Information Agency, Macknick et al 2011).



System Boundaries

Blue water evaporative consumption (direct water) and the water consumed in the direct generation of electricity (electricity water) were estimated within each stage of Deckers' supply chain. In material production, we measured water consumption for the main materials from the representative UGG and Teva shoes (see above). For the product assembly stage, an industrial water consumption conversion factor was used. For Deckers facilities, water consumption from irrigated landscape and cooling systems was estimated.

The consumer use, transportation, and packaging stages where excluded because these elements where estimated to not make a material contribution to the water footprint. Green and gray water measures are also excluded. Green water is a measure of rainwater and is excluded because rain will fall and be evapo-transpired irrespective of whether "natural" or farmed vegetation is present. Gray water is a measure of the water required to dilute pollutants to "ambient standards." The majority of biologically and chemically based waste water treatments do not use dilution and therefore gray water measurement can artificially inflate a corporation's water footprint.

Estimated Water Footprint

Ugg Classic Short

~200 to 230 liters

Deckers' 2010 estimated water footprint ranges from 3.7 to 4.1 million m^3. This volume is approximately equal to 22% of Santa Barbara's annual water usage.

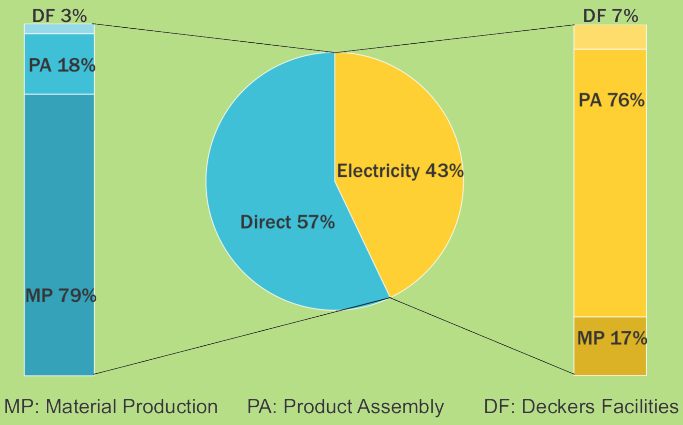
Teva Riva

~260 to 300 liters

(Shoe Image Source: Deckers)

Findings

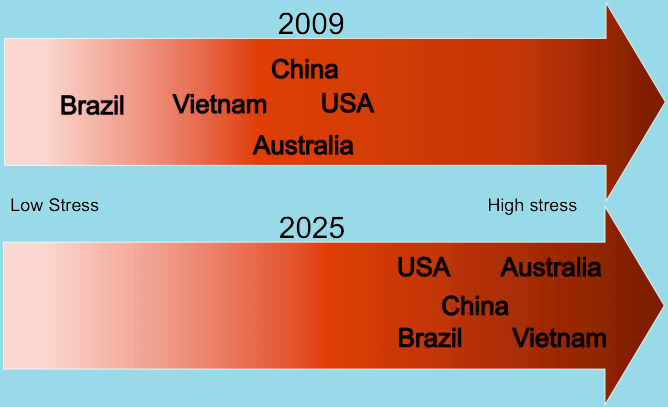
- Approximately 53 percent comes from material production, 43 percent comes from product assembly, and 4 percent comes from Deckers facilities.
- The majority of direct water stems from material production while the majority of electricity water stems from product assembly.
- Country sourcing has high influence over the model output. By changing where sheepskin is sourced in the model, there is a decrease of 7 percent to an increase of 11 percent in the total water footprint.



Bar graphs represent each component as a percentage of either the total direct water or total electricity water.

Environmental Impacts

- Water footprints do not lend themselves readily to impact analysis because the final product is one global number whereas water use impacts are inherently localized.
- Deckers' largest material suppliers will be considered highly water stressed (low water use to water availability) by 2025.
- Sourcing from countries with low water stress, such as New Zealand, actually raises the water footprint. Thus, There may be a trade off between sourcing materials from less stressed regions and an overall increase in the water footprint.



Deckers' vulnerability from climate change and population growth (Pfister et al 2009; Vorosmarty et al 2000)

Recommendations for Deckers

Recommendations for Deckers to reduce both their total amount of water consumption and their impact on water-stressed countries are framed within the context of Deckers' relative control over their supply chain vendors. Supply chain scenario analyses are a useful tool with which to target areas for improvement. For example, reducing electricity by 10 percent in the product assembly stage would reduce the total footprint by approximately 4 percent, whereas the same reduction at Deckers facilities would only reduce the total footprint by approximately 0.4 percent. This difference reflects the variance in water consumption at the supply chain stages.

Further, changing which countries Deckers sources their raw materials from is another way to reduce their water footprint. However, our model suggests that in certain scenarios, there could be an inadvertent tradeoff between reducing the total water footprint number and shifting material sourcing or company operations to countries with low water stress.

We recommend that Deckers evaluate sustainability priorities in the context of all environmental impacts of Deckers' operations. If water consumption is determined to be a priority, we provide suggestions for where and how to reduce water consumption. Regardless, we recommend that Deckers continue to measure their corporate water footprint using the methods delineated by this project so that they will have quantitative data if and when action is taken to reduce water consumption.

Most Effective Ways Deckers Can Reduce the Impacts of Their Water Consumption

- Build relationships down the supply chain
- Seek partnerships with industry groups such as the Leather Working Group & sustainability groups such as Ceres or GEMI
- Invest in energy efficiency
- Conduct business in low to medium water stress regions

(Image source: SCA)

Acknowledgements

Group Project Advisor:
Professor Tom Dunne

Additional Advisors:
Professors Robert Wilkinson, Sangwon Suh, Brandon Kuczenski, & Stephan Pfister

Funding Support:
The James S. Bower Foundation

Group Project Client:
Deckers Outdoor Corporation, Ariana Arcenas-Utley & Mark Heintz

References

- Barber, A., Pellow, G. (2006). Life Cycle Assessment: New Zealand Merino Industry Merino Wool Total Energy Use and Carbon Dioxide Emissions. Carbon (pp. 1-64). Auckland.
- Barton, B., et al. (2011). The Ceres Aqua Gauge: A Framework for 21st Century Water Risk Management (pp. 1-67).
- Bruno, N., et al. (2008). LCA of Italian and Spanish Bovine Leather Production Systems in an Industrial Ecology Perspective (pp. 1-10).
- Eco Invent Centre. (2012). Retrieved from www.ecoinvent.org
- Hoekstra, A. Y., et al. (2011). The Water Footprint Assessment Manual: Setting the Global Standard (pp. 1-228). Earthscan.
- Pfister, S., et al. (2009). Environmental Science & Technology, 43 (11), 4098-4104.
- United Nations Food and Agricultural Organization. (2010). FAOSTAT. Retrieved from http://faostat.fao.org
- Vorosmarty, C. J. (2000). Science, 289(5477), 284-288. doi: 10.1126/science.289.5477.284.
- Weimar, B. D., Browning, A. (2010). Facilities Engineering Journal, (June), 24-26.