



PPAI[®]

The Carbon Cost of Attention:

Comparing Marketing Channels

Promotional Products Association International

Introduction & Methodology

As industry leaders of carbon measurement and reporting within the media and advertising space, 51toCarbonZero have researched the carbon emissions of brand merchandising in comparison to other advertising types.

The six main advertising media channels analysed were: branded merchandise, digital, television, out of home (OOH), radio and print. The methodology covers comparable metrics from existing published research, combined with primary data from a representative sample of the brand merch industry.

The primary data consisted of a full calendar year's sales report from one of the largest merch distributors in the U.S. and one of the largest in Europe – both processing enough orders to be representative of the respective markets. From this the following metrics were calculated:

- Total products sold x emissions per product (via a leading carbon tracking tool) = Total annual footprint of all campaigns.
- Total footprint / no. of orders = average CO2 per campaign
- Total footprint / total revenue = average CO2 per EUR or USD spend
- Total footprint / impressions (+ recall) = average CO2 per memorised impression

The same metrics were calculated for the other five media channels using existing publications and research (see appendix for details). Including typical campaign scale, spend, impressions, carbon intensity and memorisation rates.

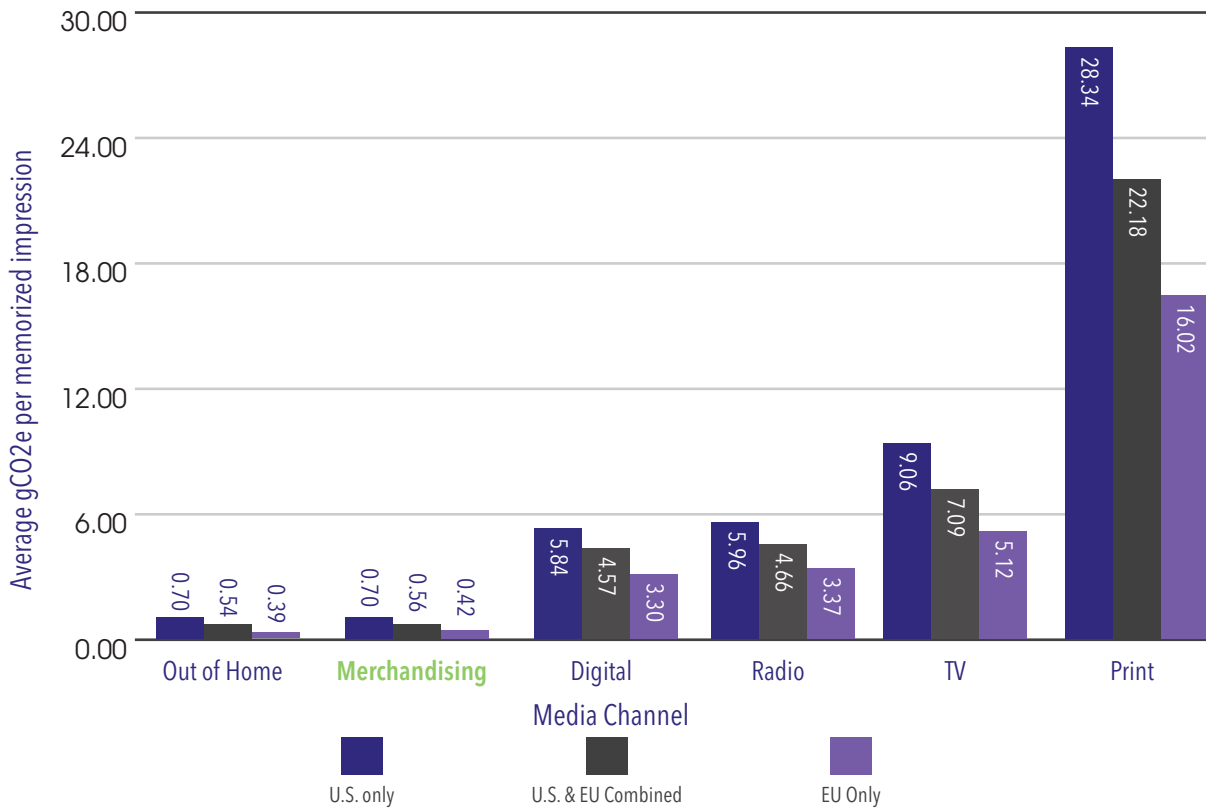
The resulting metrics link emissions to advertising effectiveness, showing which media delivers the highest memorized impact for the lowest carbon cost.

Key Findings

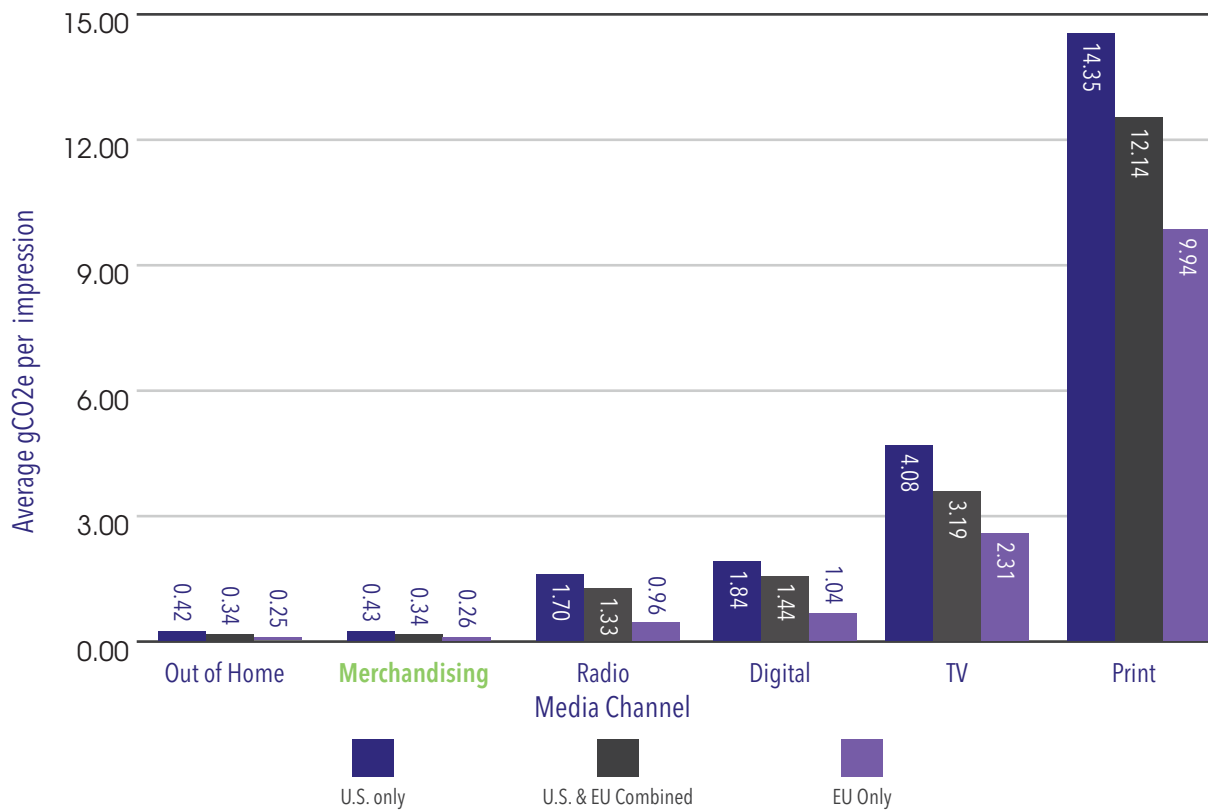
1. Across all metrics measured, promotional products emerge as one of the lowest carbon impact channels.
2. Emissions per impression are among the best in the advertising industry thanks to strong impressions and recall levels of branded merch campaigns.
3. Carbon intensity per USD spend is on-par with digital as a comparative channel.

Low Carbon, High Impact Reach

Average gCO2e per memorized impression vs. Media Channel

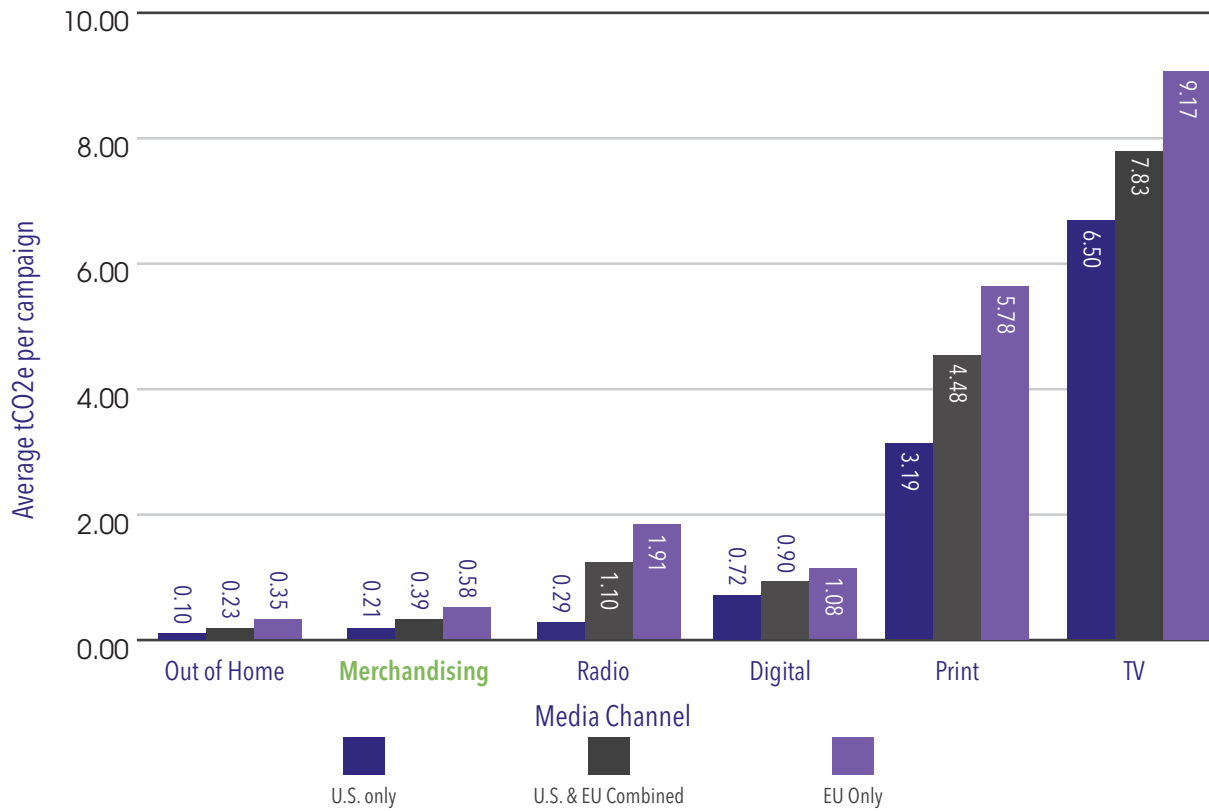


Average gCO2e per impression vs. Media Channel



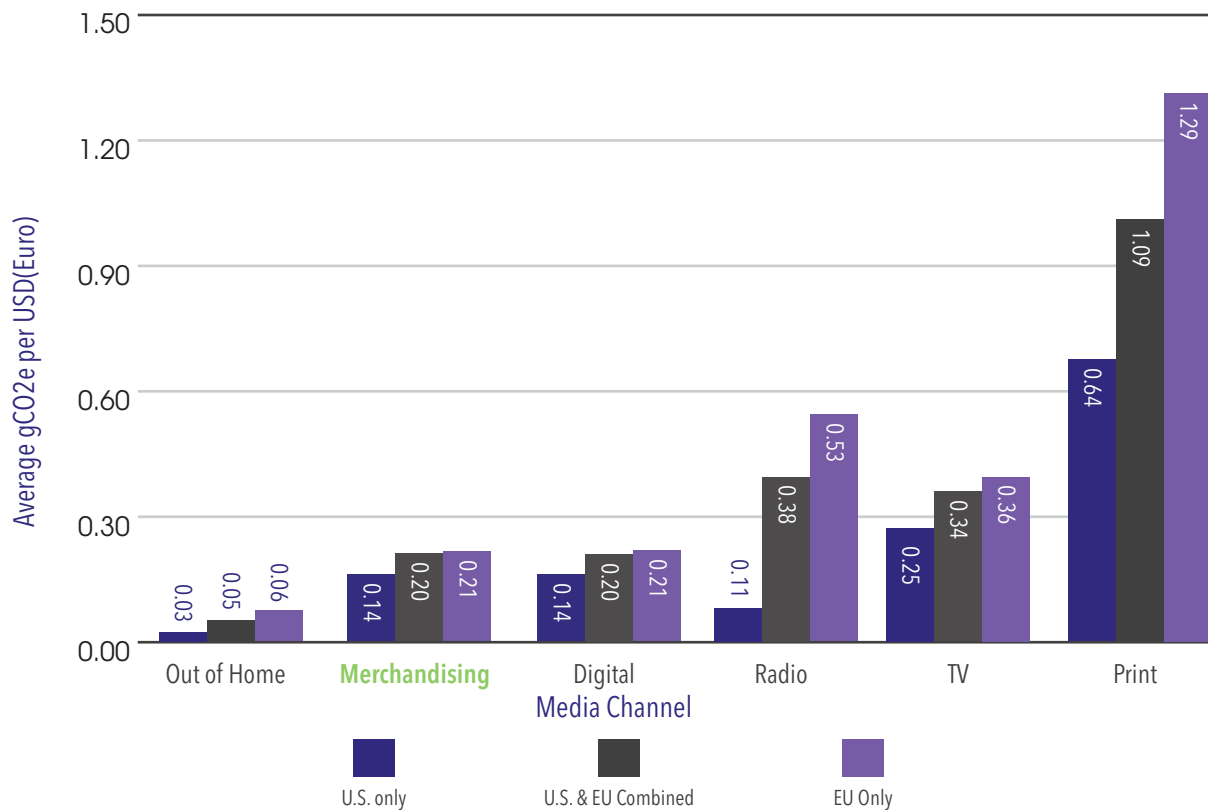
Smarter Campaigns, Smaller Footprints

Average tCO2e per campaign vs. Media Channel



Strong Impact per USD (Euro)

Average gCO2e per USD (Euro) vs. Media Channel



What This Means for the Merch Industry, Advertisers and Media Owners

This report highlights that branded merchandise are among the most carbon-efficient advertising media available, delivering strong memorised impact at one of the lowest emission levels across all channels measured. Per memorised impression, promotional merchandise performs second only to the most efficient channel, OOH, demonstrating that physical brand touchpoints can be both impactful and environmentally responsible.

This reinforces the role of merchandise as a uniquely sustainable, carbon-conscious form of brand communication. Unlike broadcast or digital channels, promotional products sit within a controllable supply chain, giving brands and distributors direct influence over material selection, production methods, logistics, and end-of-life recovery. This control enables measurable progress toward lower-carbon outcomes through design choices, sustainable sourcing, and reuse models.

For advertisers, the results position merchandise as a high-attention, low-emission complement to traditional media campaigns. It extends brand recall beyond the moment of exposure, delivering continued visibility with minimal additional carbon cost. For media owners and the wider promotional industry, it underscores the value of continued investment in lifecycle transparency, verified carbon data, and responsible procurement as key levers for competitive differentiation.

As the advertising market moves toward net zero, branded merch has a clear opportunity to lead, offering tangible, enduring, and low-carbon brand connections that align commercial impact with environmental responsibility.

Appendix: Further Methodology

Aug	- Project kick off with participants
Aug to Sep	- Methodology developed and approved
Sep to Oct	- EU distributor data collected and analysed
Sep to Nov	- Other channels research conducted
Nov to Dec	- US distributor data collected and analysed
Dec	- Results presentation and report writing

Primary promotional product data calculation steps:

- Each category of product from US distributor sales data was assigned an equivalent CO2 value as mapped in the EU study data (which originated from the carbon tracking tool). Accounting in each case for the unique emissions associated with the product type, country of origin, material, transportation, use phase and disposal. This is known as full cradle-to-grave level emissions reporting.
- Calculated CO2 data was aggregated up to show total emissions of a full year of sales covering a wide range of product and campaign types to be representative of the industry.
- Each order was classified as a unique campaign, so total CO2 data could then be divided by no. of orders to represent emissions per 'campaign'.
- Total CO2 was divided by total sales value of all orders to represent emissions per USD spend.
- For impression level calculation, each line item/product type was categorised into 1 of 17 groups for which published impression level data was available. To multiply no. of items by impressions. This was again aggregated across all orders and combined with total CO2 to create the metric of emissions per impression.
- Published recall rates of promotional products were also applied to create the metric of emissions per memorised impression.
- In all aspects, a conservative approach was taken to the data analysis to allow for any potential bias in the sources that were primarily published by the merchandising industry themselves.

To calculate the these same metrics for the five other media channels, the following methodology was used:

- Typical campaign scales were derived from average spend and CPM benchmarks (various sources per channel type).
- A per-impression intensity factor from KPMG/Outsmart (2024) was applied and adjusted to the difference in electricity grid intensity between EU and US).
- The number of impressions per media channel were then adjusted for average US ad recall rates (Solomon Partners, 2022; OAAA, 2023)



Promotional Products Association International

Data was obtained using a carbon tracking tool, with a methodology certified by Bureau Veritas to be in accordance with ISO 14067 principles and dedicated to the promotional industry, in addition to research provided by PPAI, ASI and 2FPCO. Comparative media relied on sources such as published research, articles and documents from reputable industry outlets. 51toCarbonZero, a third-party research group and adviser, applied its own professional judgement and experience of its industry researchers to furnish the final dataset.

This collective industry study applies recognized life-cycle assessment principles to produce comparative, directional insights, rather than product-level or third party-reviewed LCA results. It relies on statistics provided by two significantly sized distributors – one in the U.S. and one in Europe – large enough to be reasonably representative of those markets.

Ideally, these results encourage more companies to share and participate in similar studies, creating even larger road maps. This approach enables the industry to progressively build more complete and decision-useful datasets over time.