

Literature looks at the carbon footprints of e-commerce and traditional shopping

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Through its Environmental Measurement and Monitoring System (EMMS), IPC has commissioned Verisk Maplecroft, an independent global risk analytics and advisory firm, to undertake a review of prominent, high-quality existing literature examining the environmental impacts of e-commerce. The objective of this literature review is to assess the differences between the environmental impacts associated with online and traditional retailing.

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Online retail sales are growing more quickly than traditional retail sales, with e-commerce sales in 2017 expected to represent 10% of total worldwide retail sales (eMarketer, 2017). This compares with a figure of 5.8% reported in 2015 (eMarketer, 2017). Furthermore, year-on-year growth rates are projected to continue to hover around 20% until at least 2020. The move to online retail is driving a fundamental shift in the way consumers are supplied with products.

At the same time growing consumer awareness around companies' environmental impacts is increasing demand for sustainable products and services. Within this context, there is mounting interest in understanding the environmental impacts associated with

online retail.

Against the backdrop of the explosive growth in online shopping many studies have assessed the environmental impacts associated with e-commerce over the last 15 years. Within the scope of this review, 53 publications were assessed for the insights they provided in answering the research question: How do the environmental impacts of e-commerce compare with those associated with traditional shopping?

The focus of the literature review is the greenhouse gas emissions associated with the 'last mile' delivery. In both online and traditional retail, the factors dictating the greenhouse emissions generally fall into two broad categories: consumer behaviour and logistics. Consumer behaviour includes: the number of items purchased concurrently, the distance travelled, combining traditional shopping travel with other activities (known as trip chaining), returns, and transport type. Logistics includes: route optimisation, warehouse densities, retail densities, and missed deliveries.

The full literature review including references is **available to IPC Sustainability programme participants [here](#)**.